

**UNDERSTANDING VISITORS ALL INDIA CONFERNCE OF HEADS
& SCIENCE MUSEUM /CENTERS**

Dr. S. SETHURAMALINGAM
Scientist-in-Charge
Regional Museum of Natural History, BHOPAL

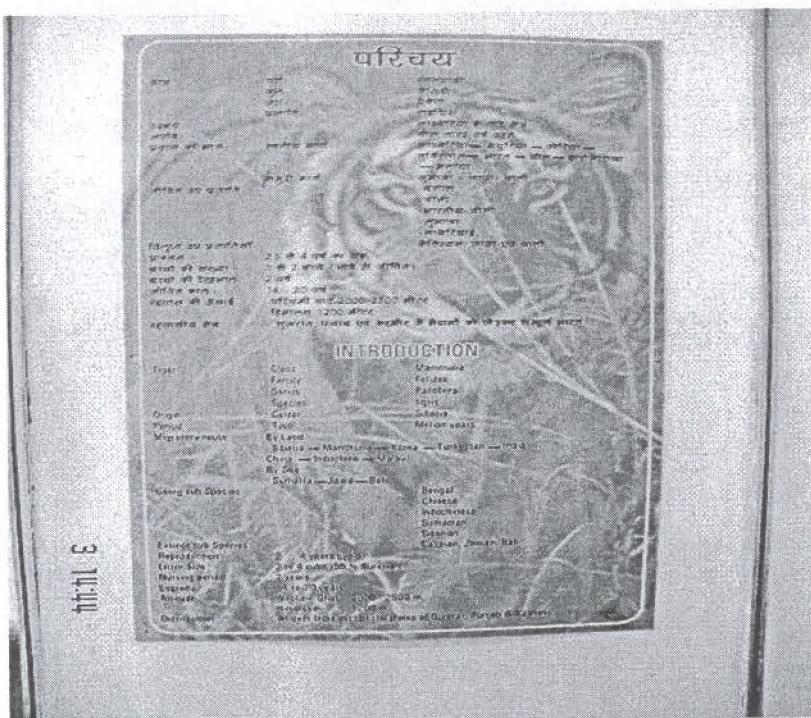
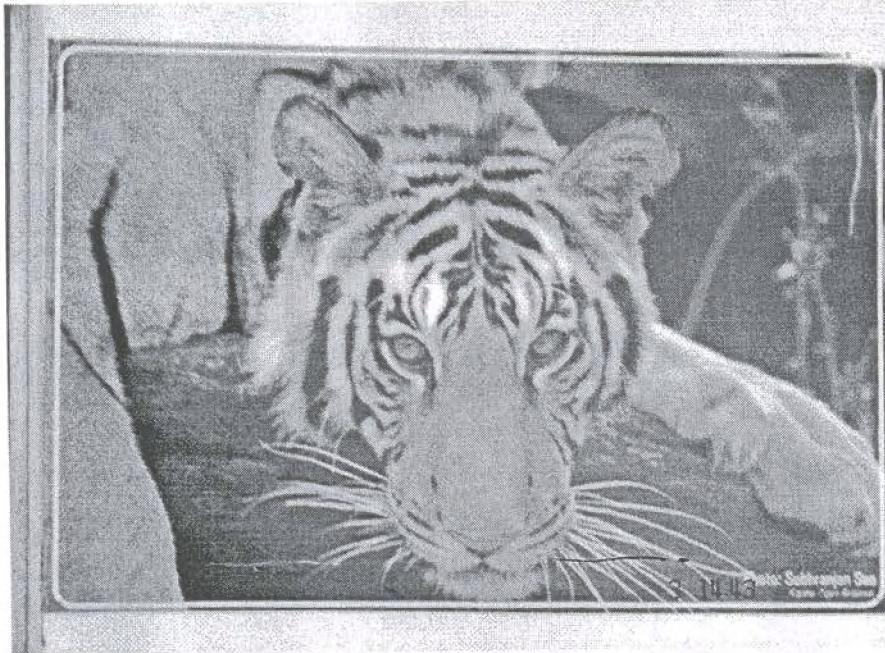


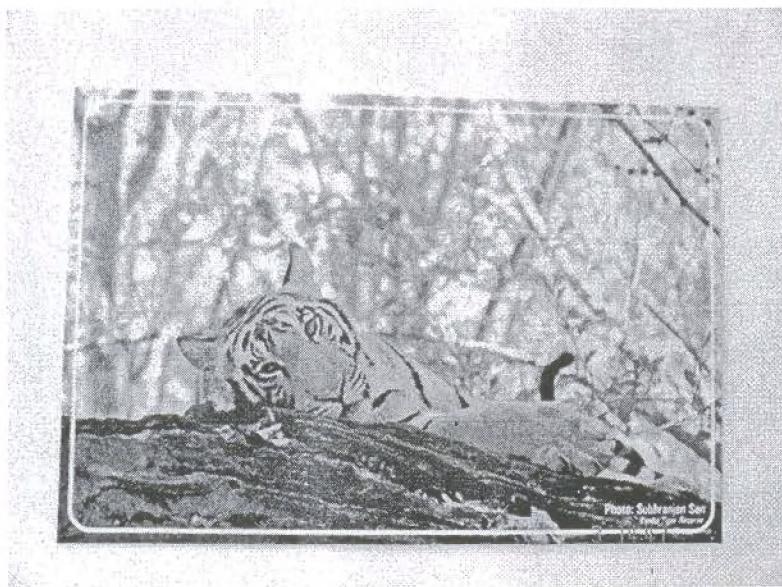
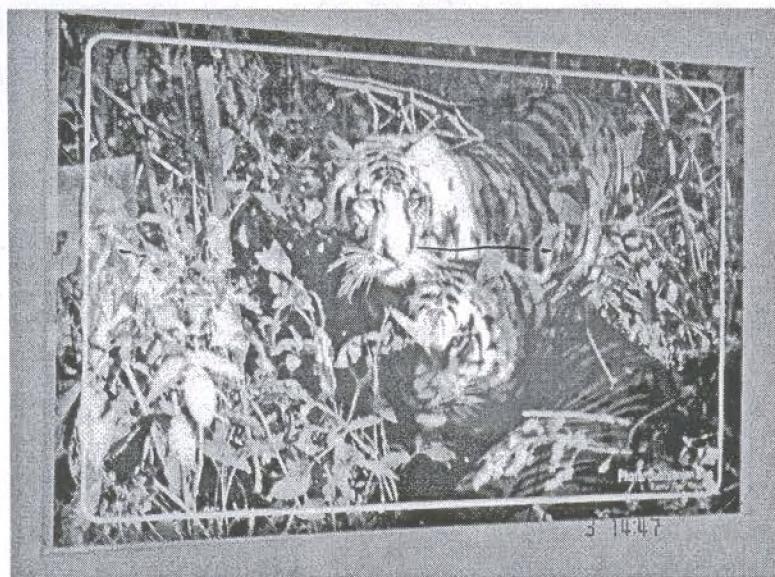
**REGIONAL MUSEUM OF NATURAL HISTORY
(Ministry of Environment and Forests, Govt. of India)
E-5 Arera Colony, Bhopal 16**

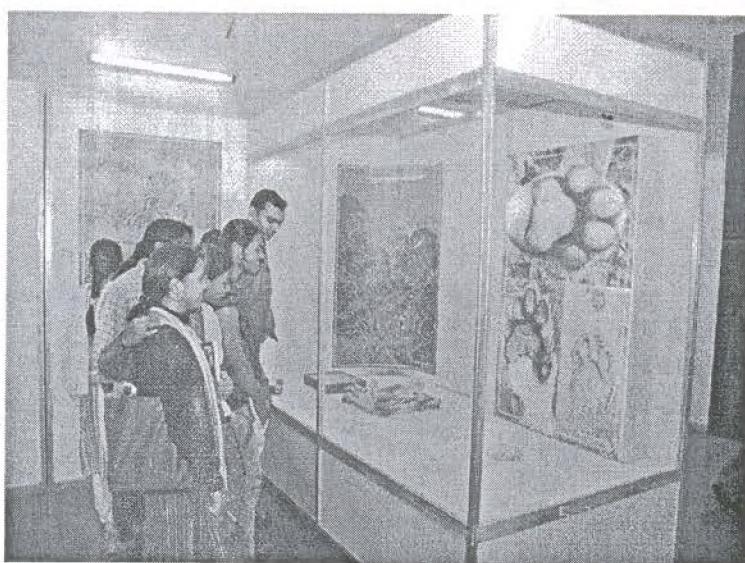
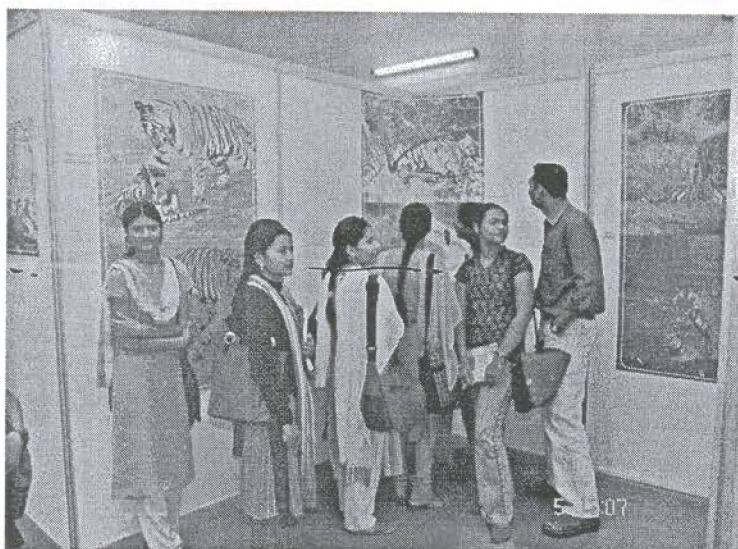


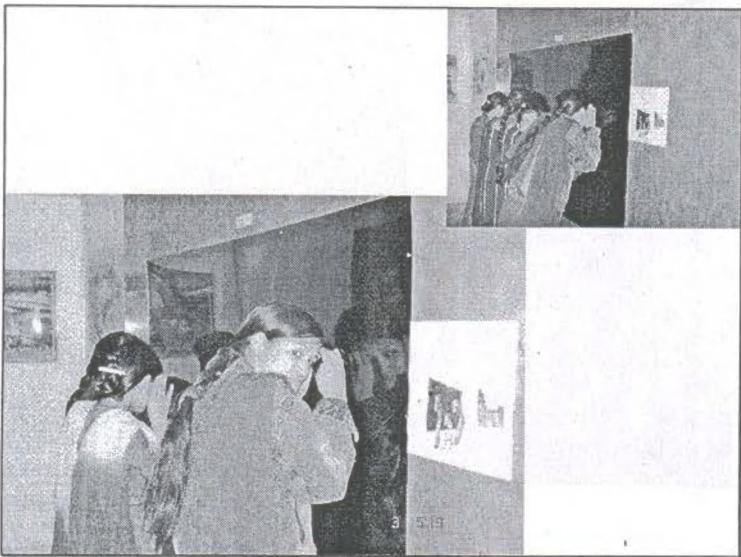
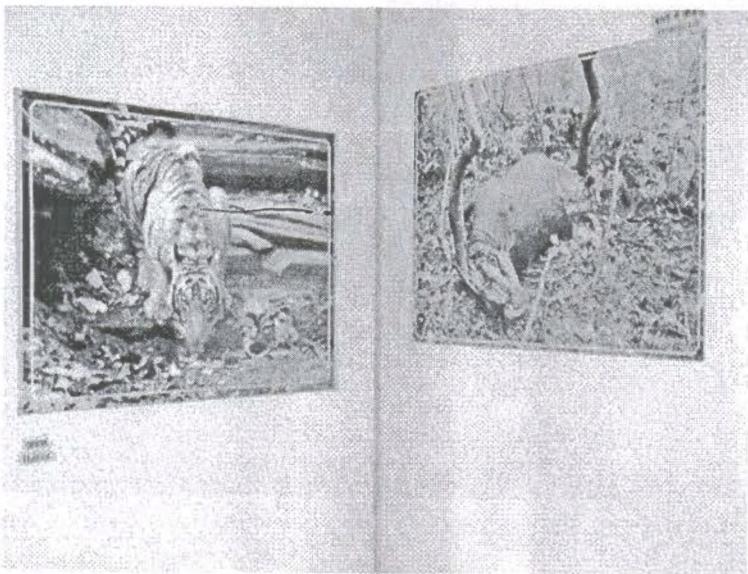
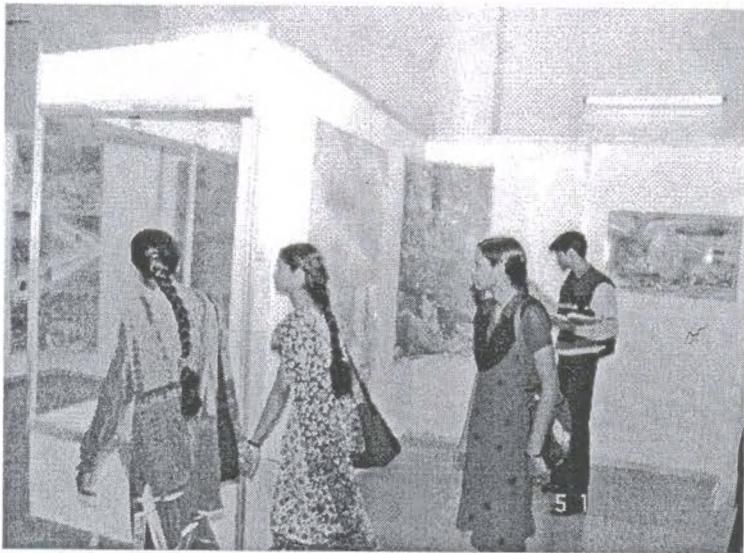
Methodology

- OBSERVATIONS
- TRANSCRIPTIONS





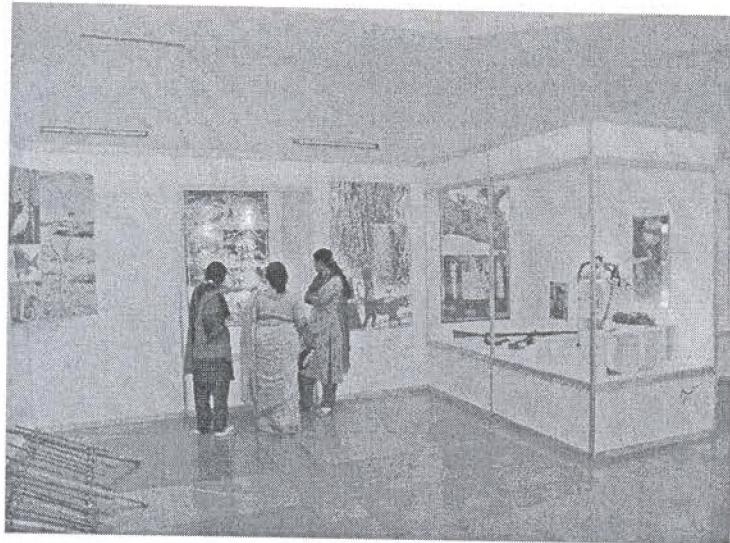




MODELS OBSERVED

- SOCIAL
- COGNITIVE
- ENVIRONMENTAL
- INTERFACE
- PLURAL CHARACTERS
- LEARNING EXPERIENCE
- CURIOSITY
- FREE CHOICE LEARNIG
- AUTOTELIC





VISITOR ROUTE

Cat family—Body part--- Pug marks--- Magic view—Day life--- Weapons

LESS ATTRACTIVE

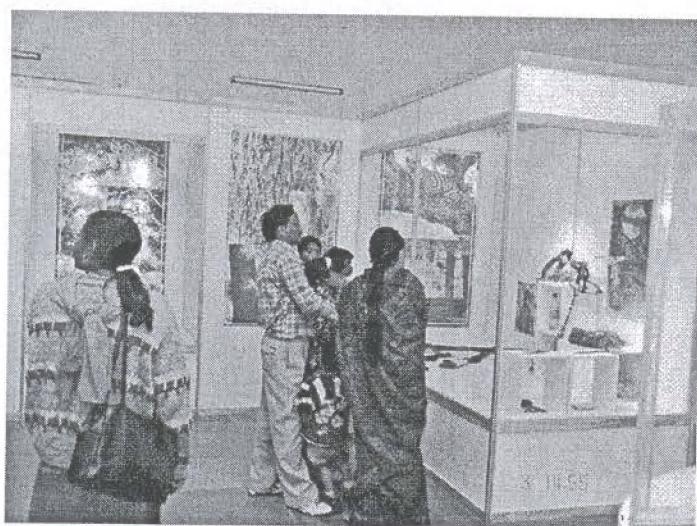
1. Unusual food
2. Fake skin

LESSER ATTRACTIVE

3. Teaching mother
4. Camera trap

LEAST ATTRACTIVE

5. Biological fencing





Urban

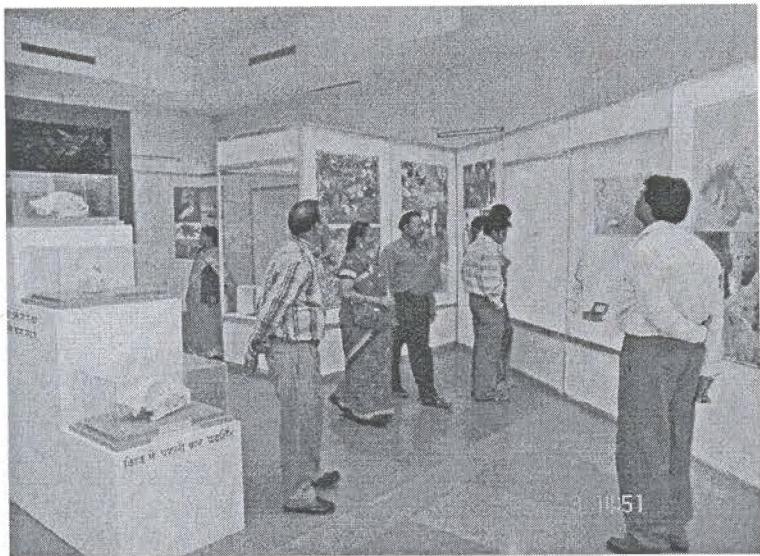
Child M	F	Teenager		Adult		Family group
		M	F	M	F	
197	90	123		162	475	418,522,305,774,82,302,202,864,375,
204		1244		193	115	265,435,154,223,485,472,322,425,338
92				475		,446,324,341,185,521,353,514
146				146		
235				515		
144				1265		
363				190		
				720		
				635		
				174		
				115		
				305		
197.28	90	683.5		407.91	295	385.88

Rural

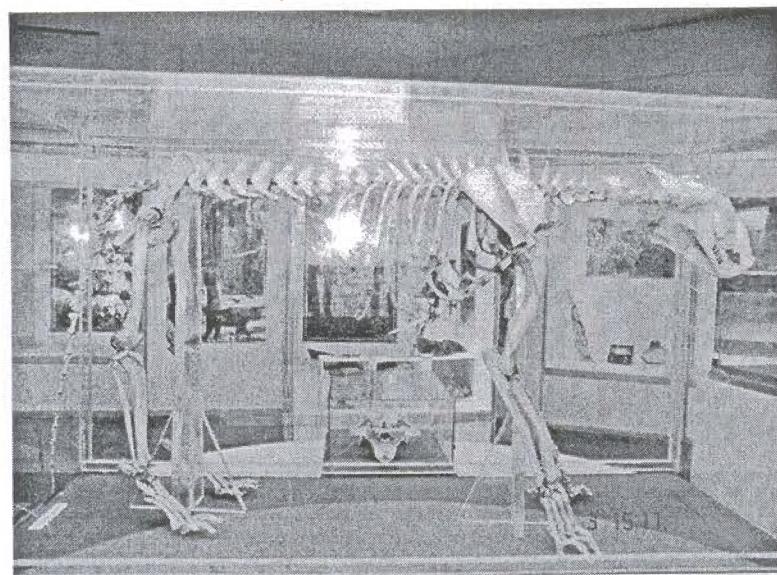
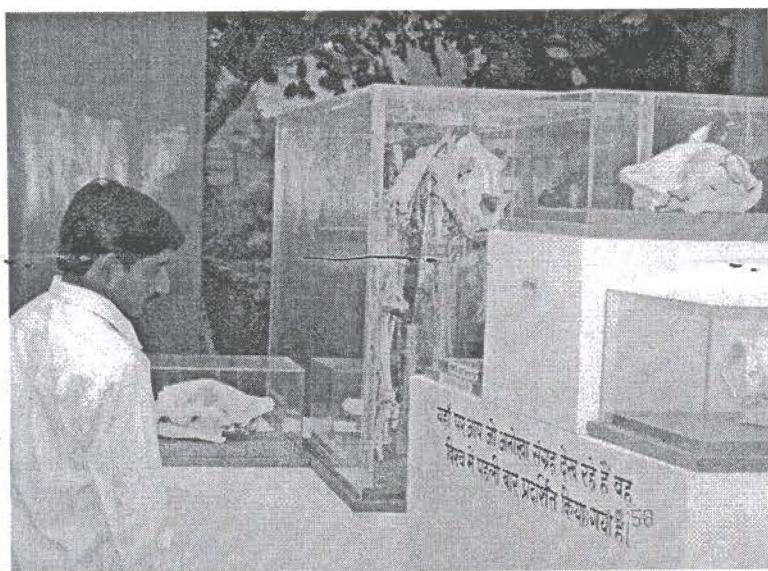
Child M	F	Teenager		Adult		Family group
		M	F	M	F	
170					265	304,502,193,483
54						
134						
208						
141.5				265		370.5

Visitor profile

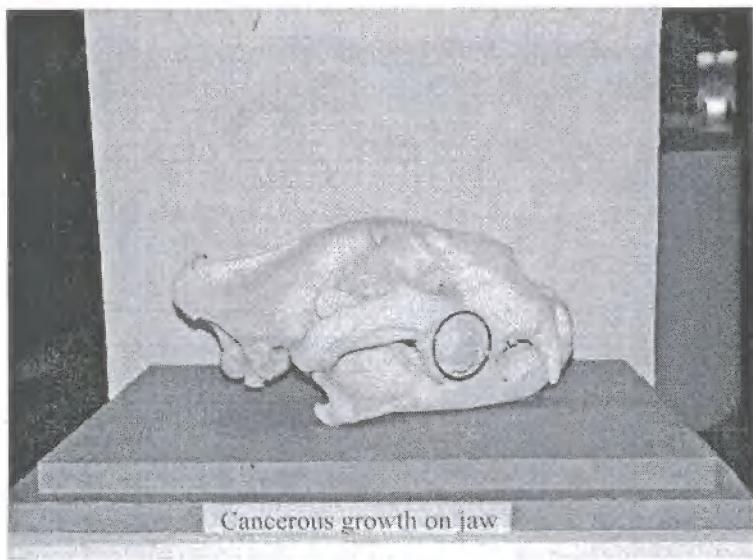
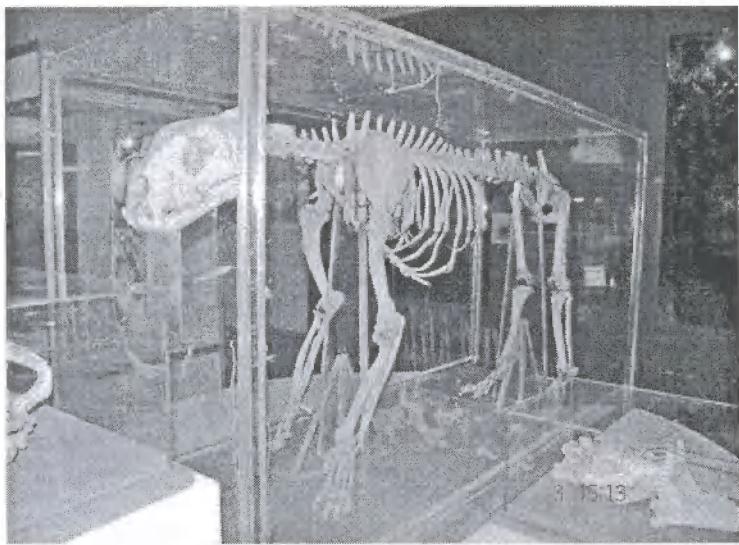
17-10-2006	-	155.5/day
24-10-2006	-	217/day
31-10-2006	-	244/day
07-11-2006	-	224.5/day
11.11.2006	-	343.33/day
21-11-2006	-	223.66/day
28-11-2006	-	255.33/day

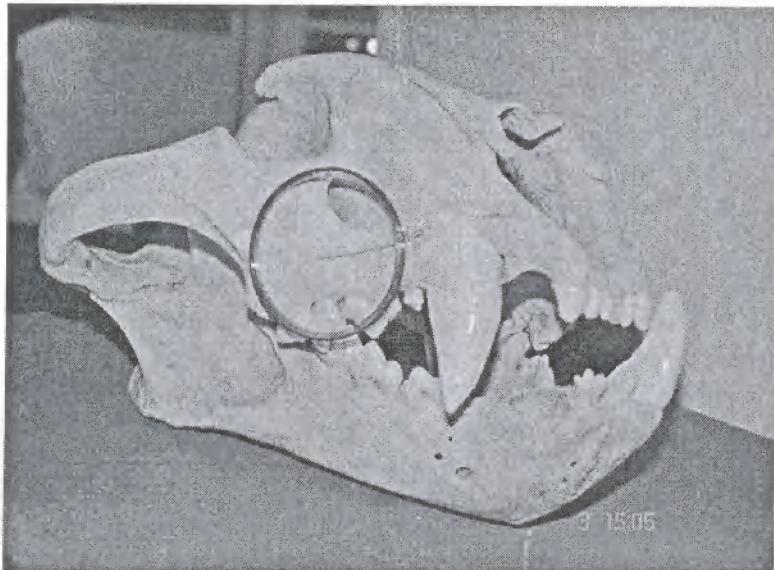
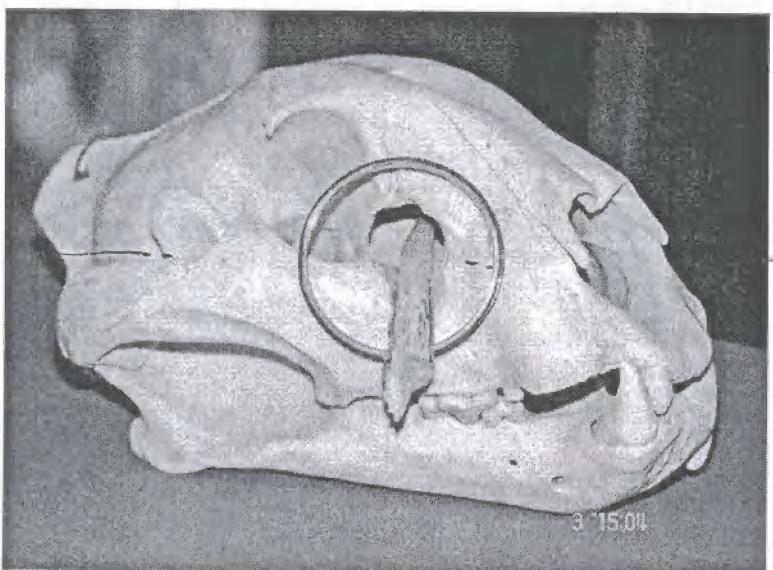
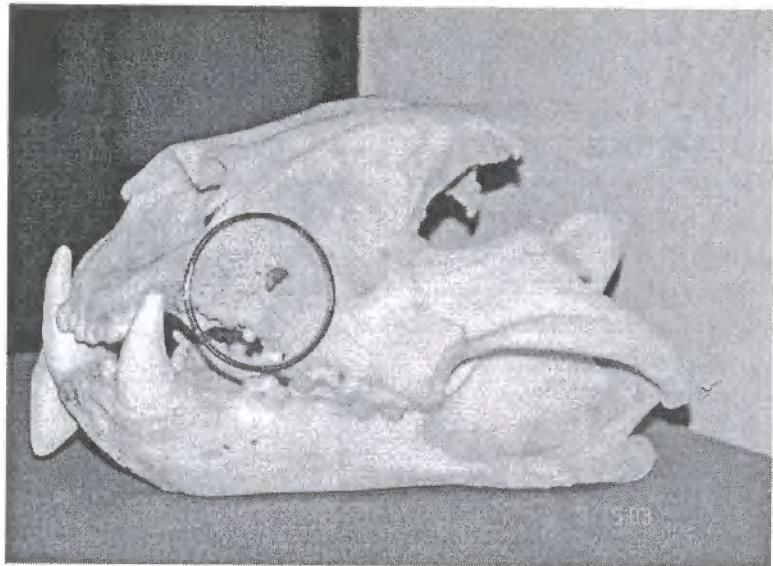


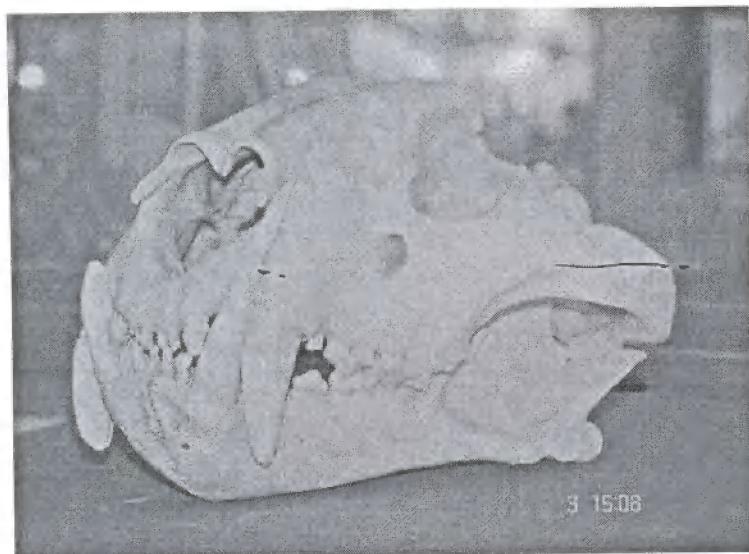
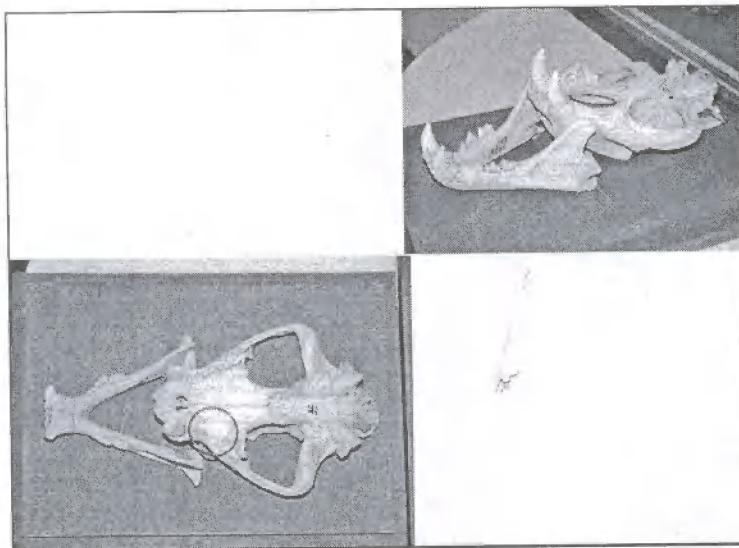
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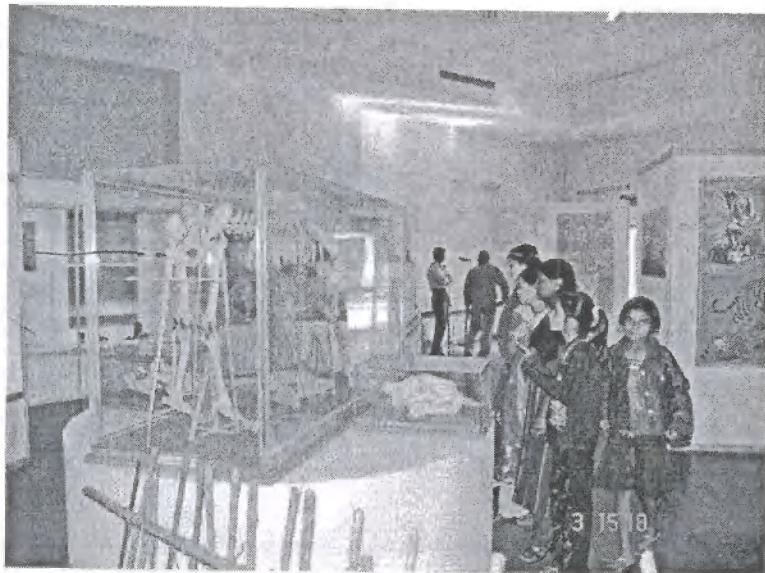
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Visitor	Pug mark	Romance	Body part	Man eater	Magic view	Day life	Weapon	others
T.A	--		--					
Family					--	--		
M.F.C								
Group			--					
2M.1F								
Family	--			--				
1M.2c								
Group			--		--			
M.T.A								
Old			--			--		
M.F								
Family					--	--		
1M.1F.2C.1TA								
M.F.MC			--	--				
Large family				--	--			
M.F.1TA.1C			--	--	--			
Family			--	--				
M.F.C								
Group			--		--			
20M.1F								
Family				--	--			
M.F.C								

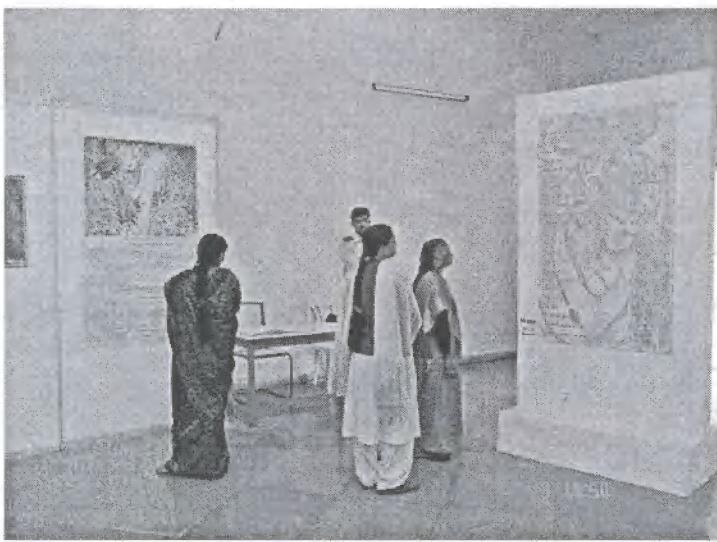
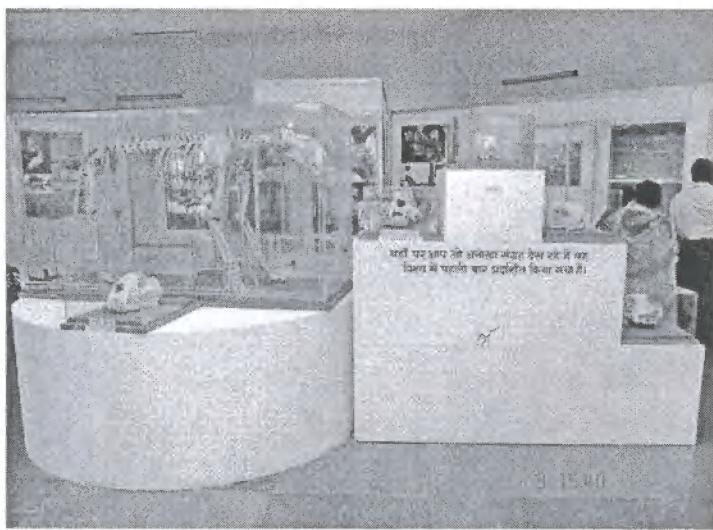


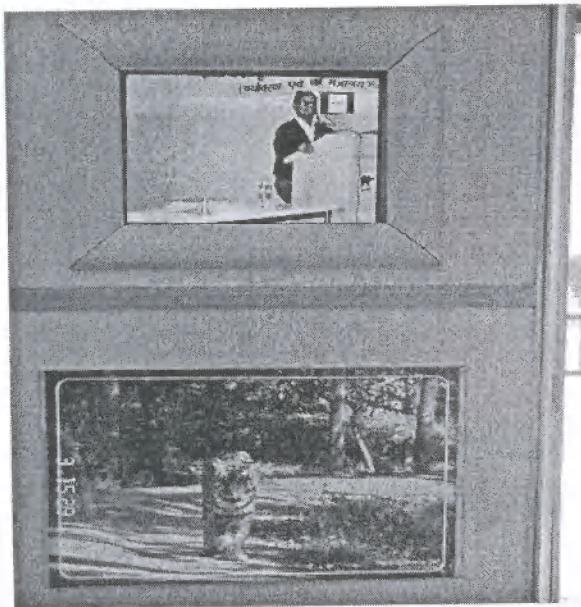
KEY LEARNING BEHAVIOURS NOTICED

SOCIAL	- Personal experience
THEORITICAL	- Academic approach
INQUIRY	- Challenges
INTUTIVE	- Apprehensive

PERSONAL AND

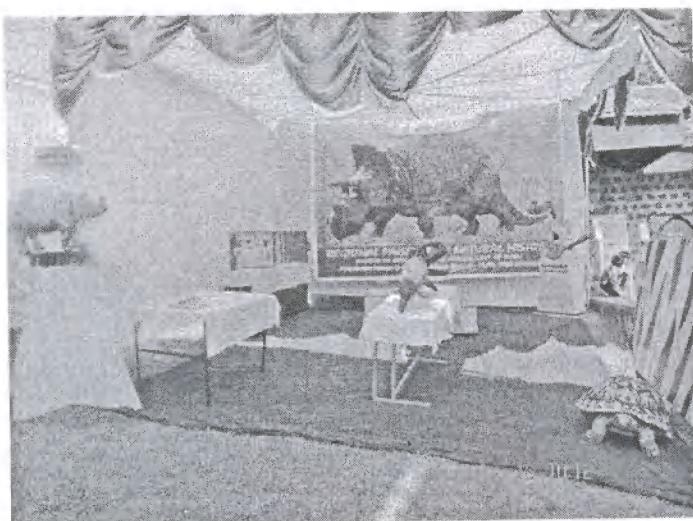
IDIOSYNCRATIC	- Abnormal
TRANSFORMATIC	- Change their opinion





National Balrang Festival 2006 at IGRMS, Bhopal

1. Dinosaur skull
2. Insectivorous plants
3. Vertebra of whale
4. Turtle









Future focus

- UNDERSERVED COMMUNITY
- NON-MUSEUMVISITORS
- 'AVERAGE AUDIENCE'
- COMFORT ZONES
- 'SCARCE RESOURCES'
- DENSITY OF ELEMENTS
- VISITOR WITH WEEK LINKS
- VISITOR NOT PASSIVE SUBJECTS
- LIFE STYLE ISSUES
- THEMOGRAPHIC RENDERING
- WEB VISITOR OR
- ON LINE VISITOR BEHAVIOUR

ACKNOWLEDGE

- Shri Sudhir Mittal, I.A.S.
J.S.& Director, NMNH, New Delhi
- Shri Manoj.Kumar Sharma, (Taxidermist)
Co-ordinator, Save Tiger Exhibition and
National Balrang-2006 Exhibition,
- Shri ManikLal Gupta (Educational Assitt) and
Shri Gautam Singh Yadav, (Photographer), RMNH, Bhopal

SCHOOL VISITORS: IMPACT ASSESSMENT ON TEACHERS AND STUDENTS

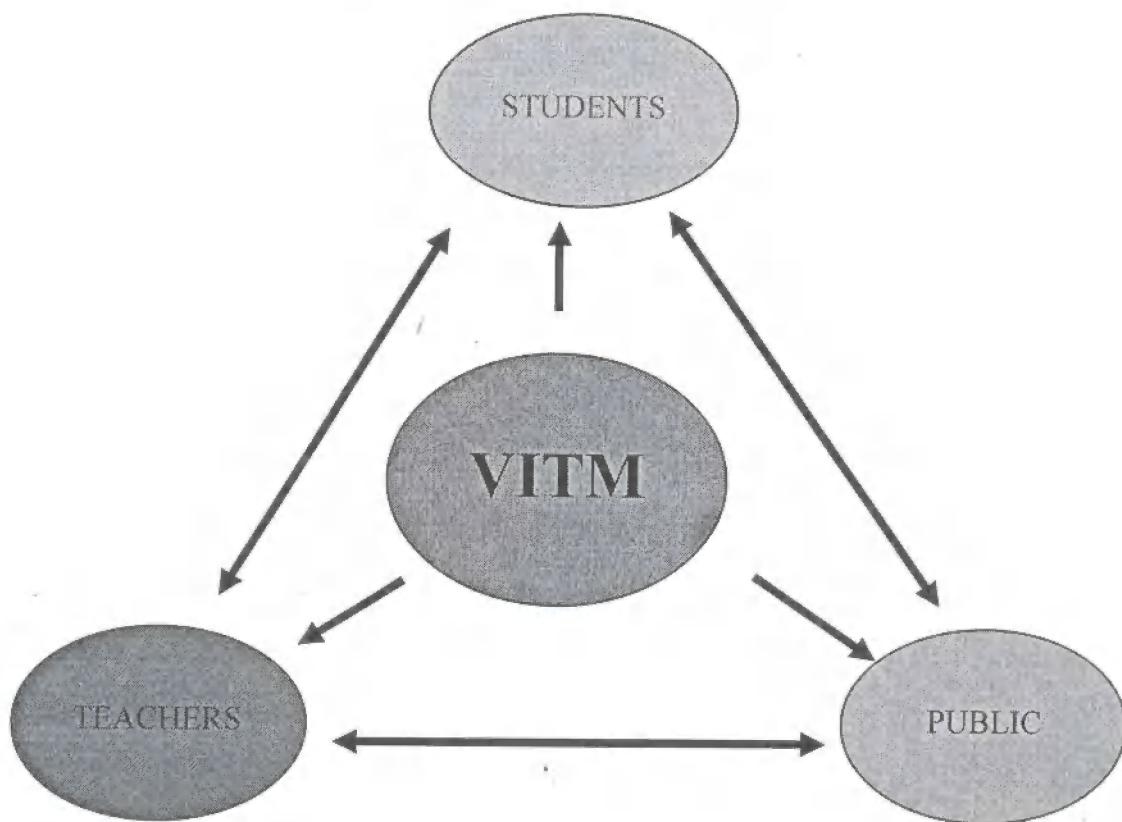
Dr. C. Sukumaran
Curator, VITM

INTRODUCTION

Visvesvaraya Industrial & Technological Museum, established in 1965 at Bangalore, is a unit of National Council of Science Museums(NCSM), an autonomous body functioning under the Ministry of Culture, Govt. of India. Its main objective is to popularize science and technology by means of exhibits and educational activities among the public, especially the students.

Spread over 2.7 acres of land in the Cubbon Park of Bangalore, Visvesvaraya Industrial & Technological Museum provides a perfect environment for school students to learn, families to spend creative holidays, and professionals in the field of science education to have a glimpse of innovations in science and technology. About 8.8 lakh people visit VITM every year to experience and enjoy the exhibits that explain the basic concepts of science in passive, active and interactive ways. Over 1.8 lakh school students, who form about 20% of the total visitors, enjoy the exhibits and also participate in different programmes and activities of the Museum every year.

MUSEUM AND ITS VISITORS



OBJECTIVES OF THE SURVEY

As about 20% of the total visitors to VITM every year are student visitors, it was decided to conduct a school visitors survey to understand the impact of all the gallery exhibits and educational programmes on the teachers and students in the areas namely:

- Acquisition of knowledge
- Change in the attitudes
- Effectiveness of the exhibits
- Creating scientific temper

METHODOLOGY

- The survey was made in the year 2005 (Jan – Dec) on the school visitors of the year 2004 (Jan-Dec) – the Year of Scientific Awareness.
- The addresses of the schools were collected from the school visitors register maintained at VITM.
- The subjects were all school, college, polytechnic and ITI students and the teachers who accompanied them to the Museum.
- The subjects were not divided by age, sex, class and science or non-science groups.
- The questionnaire was containing two parts – one for the teacher's response and the other for the student's response. The teachers were requested to distribute the questionnaires meant for the students; then collect and return the duly completed questionnaires back to the Museum along with their own.
- Sufficient number of copies of the questionnaires (for both teachers and students) were sent to about 1000 rural, semi-rural and urban schools, colleges, polytechnics and ITIs that were selected randomly from the visitors' register.
- 207 teachers and 592 students responded to the questionnaire.

THE QUESTIONNAIRE

The questionnaire was so designed to cover the following aspects:

GENERAL:

- Information about the school and the purpose of the visit
- Galleries visited and the holding power of the galleries
- General acquisition of knowledge
- Better understanding of science concepts
- Revisit to the Museum

TEACHERS:

- Attitude change of students – pre-visit and post-visit grading
- Post visit enhancement of teaching skill

STUDENTS:

- Interest in science

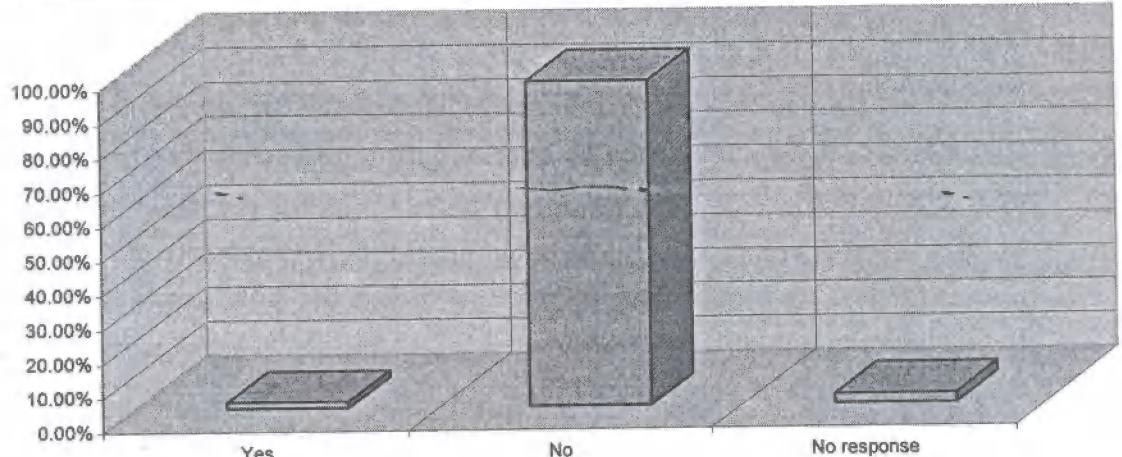
Preference of science subjects for further academic studies

- PERIOD OF VISIT : JAN.04 TO DEC. 04
- YEAR OF SURVEY: JAN.05 TO DEC. 05
- NUMBER OF TEACHERS SURVEYED: 207
- NUMBER OF STUDENTS SURVEYED: 592

TEACHERS RESPONSE

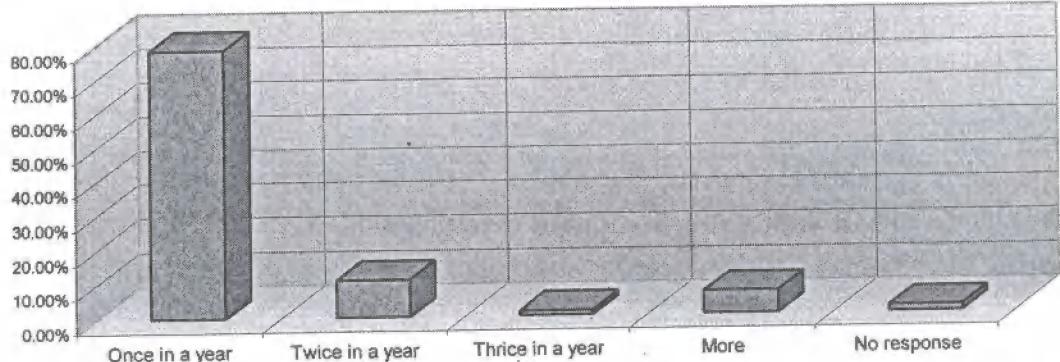
➤ Is your Institution a member of VITM Activity Club?

Yes	No	No response	Total
4	197	6	207
1.93%	95.17%	2.90%	100.00%



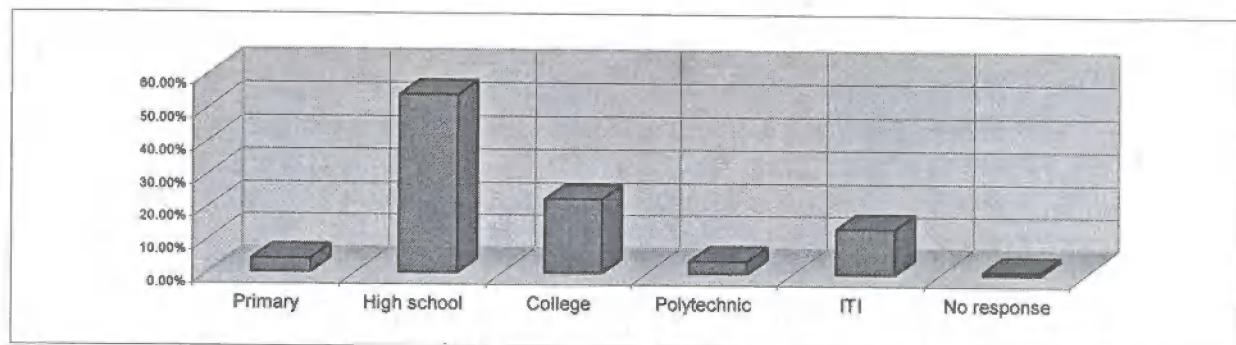
➤ How often does your school conduct such tours?

Once in a year	Twice in a year	Thrice in a year	More	No response	Total
163	23	3	14	4	207
78.74%	11.11%	1.45%	6.76%	1.93%	100.00%



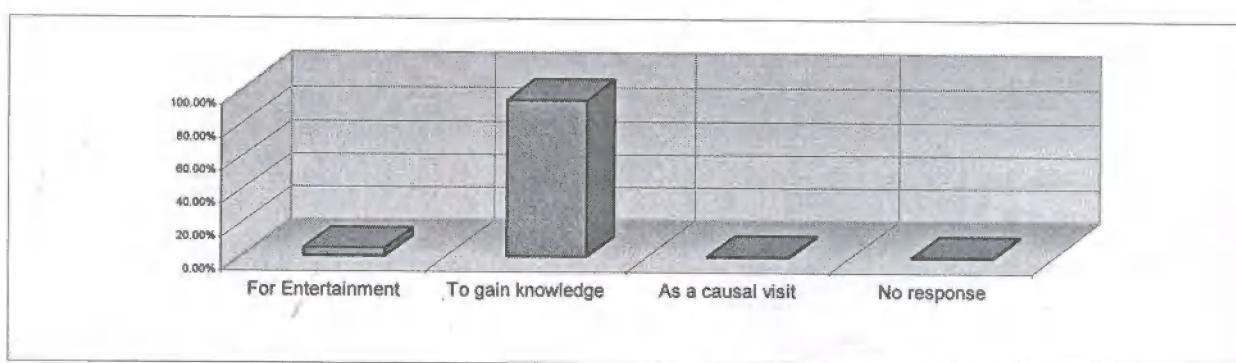
➤ Which students group do you generally accompany?

Primary	High school	College	Polytechnic	ITI	No response	Total
9	112	47	8	29	2	207
4.35%	54.11%	22.71%	3.86%	14.01%	0.97%	100.00%



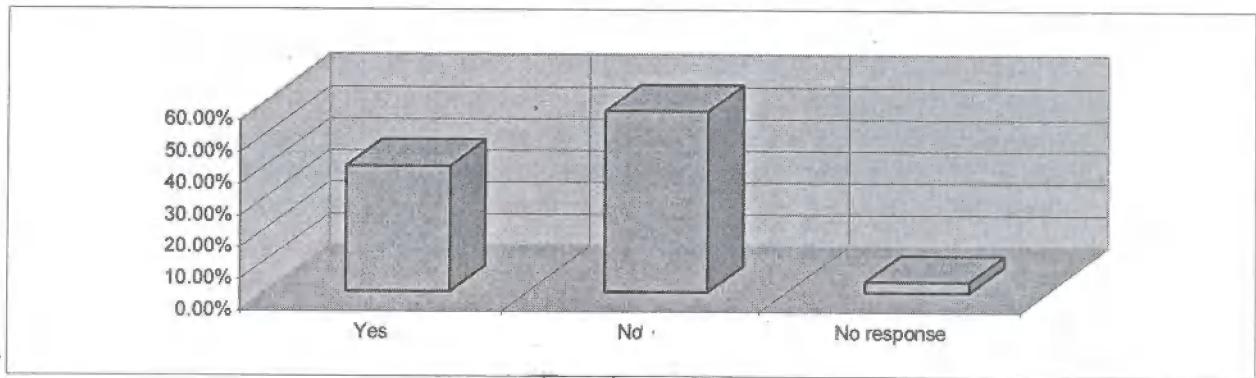
➤ What is the purpose of bringing your students to the museum?

For Entertainment	To gain knowledge	As a causal visit	No response	Total
10	195	1	1	207
4.83%	94.20%	0.48%	0.48%	100.00%



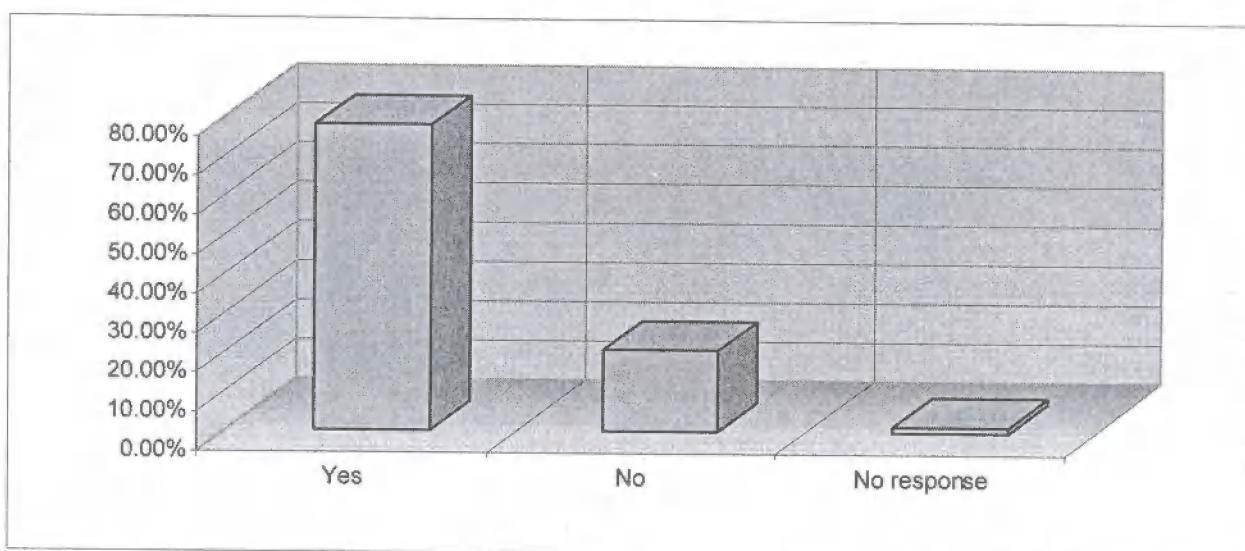
➤ Have you visited any other Science Museums?

Yes	No	No response	Total
82	118	7	207
39.61%	57.00%	3.38%	100.00%

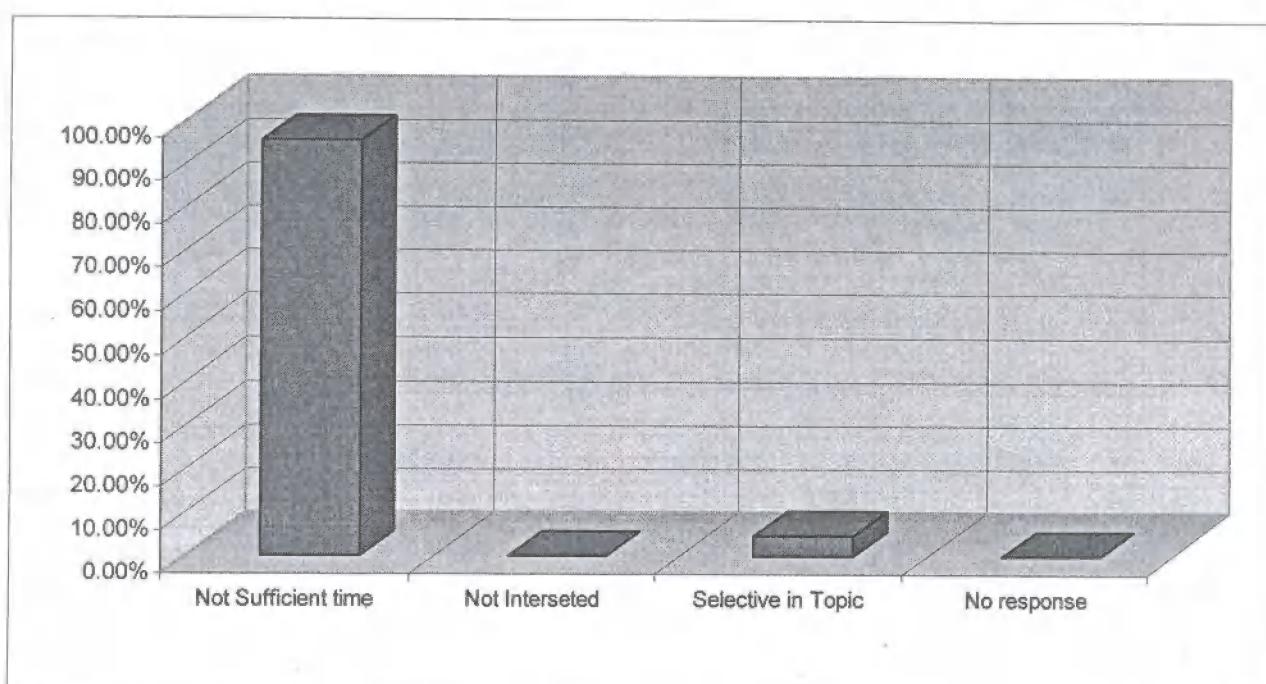


➤ Have you taken your students to all the Eight galleries? If not, why?

Yes	No	No response	Total
161	43	3	207
77.78%	20.77%	1.45%	100.00%

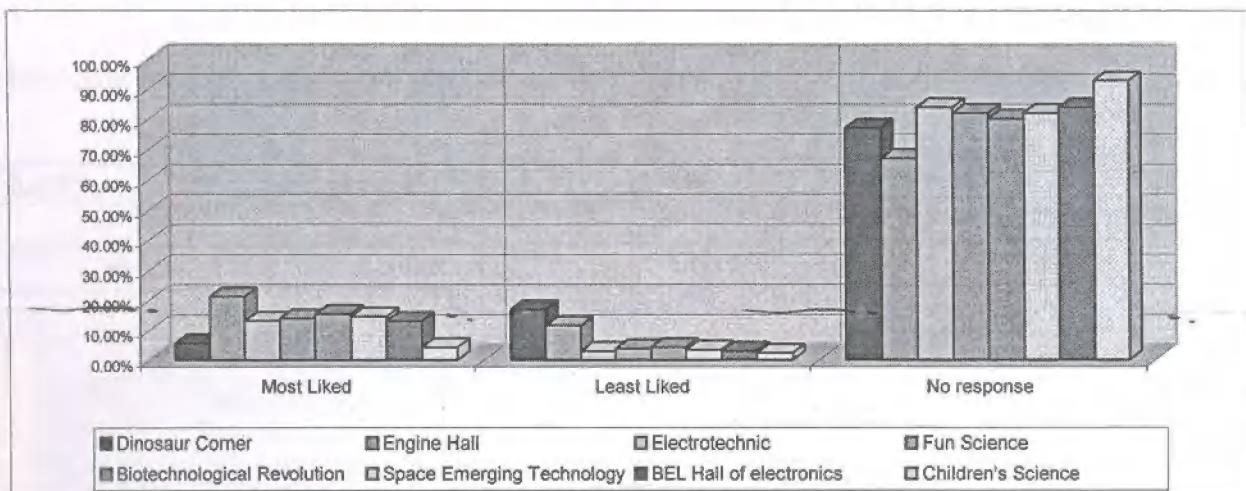


Not Sufficient time	Not Interested	Selective in Topic	No response	Total
41	0	2	0	43
95.35%	0.00%	4.65%	0.00%	100.00%



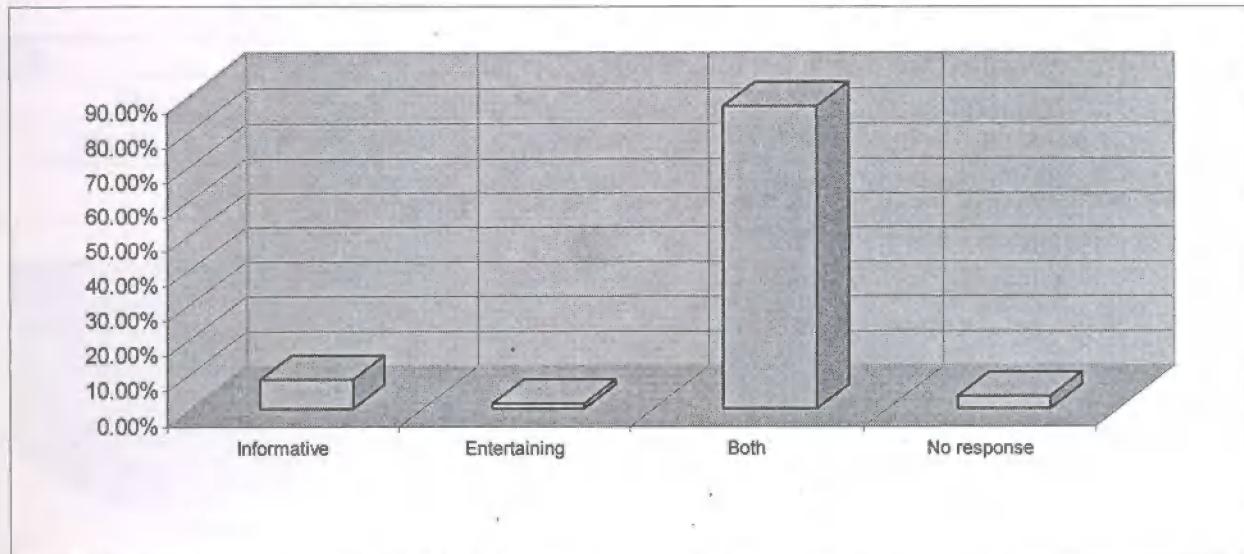
➤ Which gallery you liked the Most & also the Least?

Galleries	Most Liked	Least Liked	No response	Total
Dinosaur Corner	12 5.80%	35 16.91%	160 77.29%	207 100.00%
Engine Hall	44 21.26%	24 11.59%	139 67.15%	207 100.00%
Electrotechnic	27 13.04%	6 2.90%	174 84.06%	207 100.00%
Fun Science	29 14.01%	8 3.86%	170 82.13%	207 100.00%
Biotechnological Revolution	32 15.46%	9 4.35%	166 80.19%	207 100.00%
Space Emerging Technology	30 14.49%	7 3.38%	170 82.13%	207 100.00%
BEL Hall of electronics	27 13.04%	6 2.90%	174 84.06%	207 100.00%
Children's Science	9 4.35%	5 2.42%	193 93.24%	207 100.00%



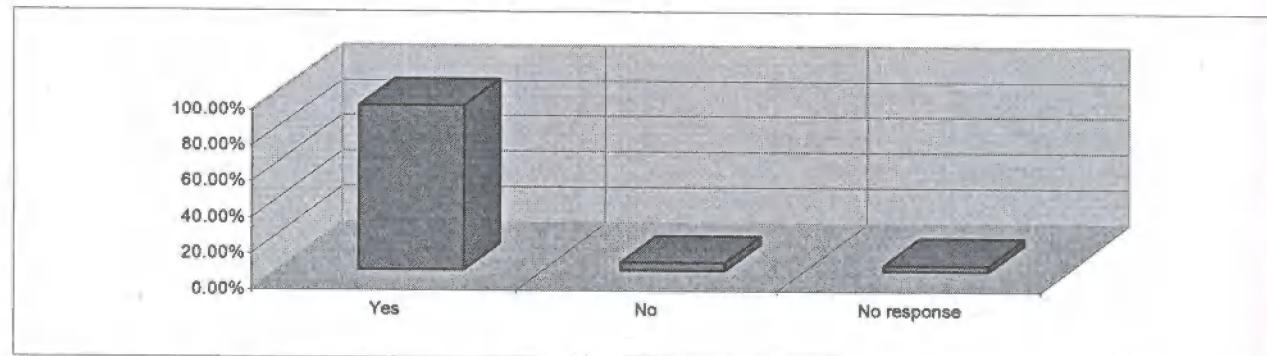
➤ Did you find this museum informative / entertaining or both?

Informative	Entertaining	Both	No response	Total
17 8.21%	3 1.45%	180 86.96%	7 3.38%	207 100.00%



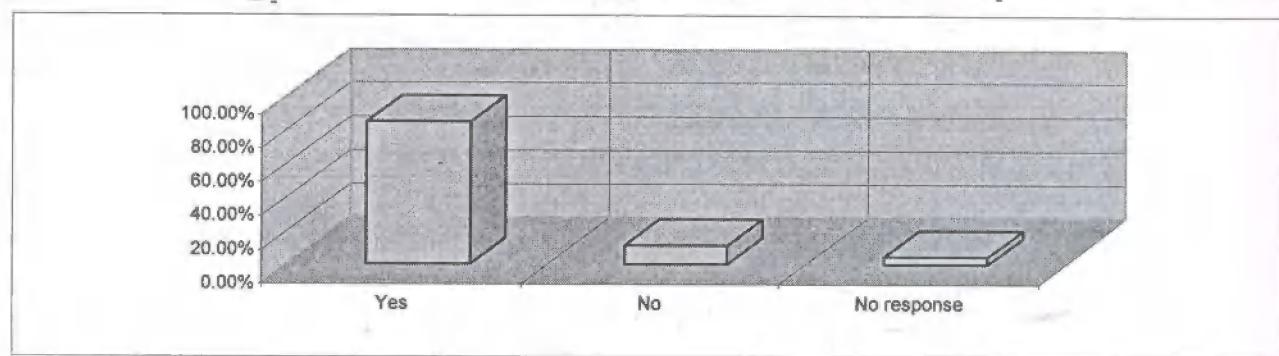
➤ Does the visit to such modern technology galleries have any influence on the career structure of the students?

Yes	No	No response	Total
191	9	7	207
92.27%	4.35%	3.38%	100.00%



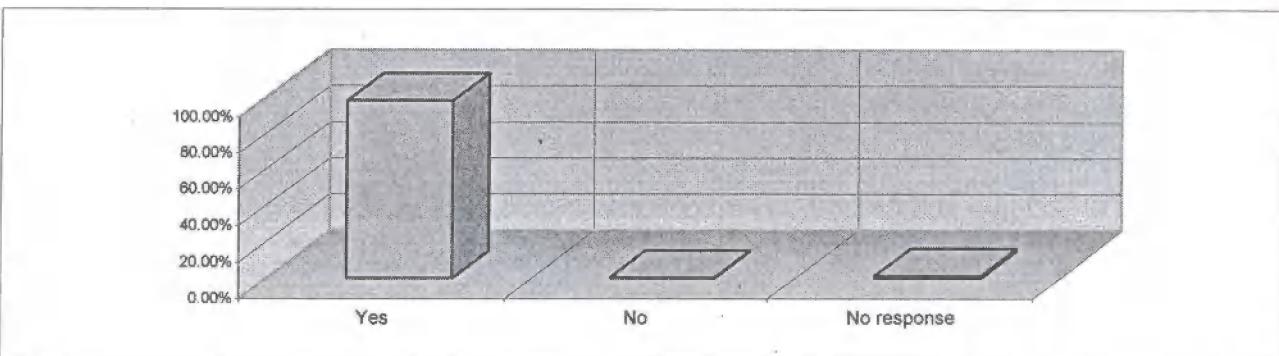
➤ During your visit to the museum did you find anything that you could adopt/ use during your teaching?

Yes	No	No response	Total
174	23	10	207
84.06%	11.11%	4.83%	100.00%



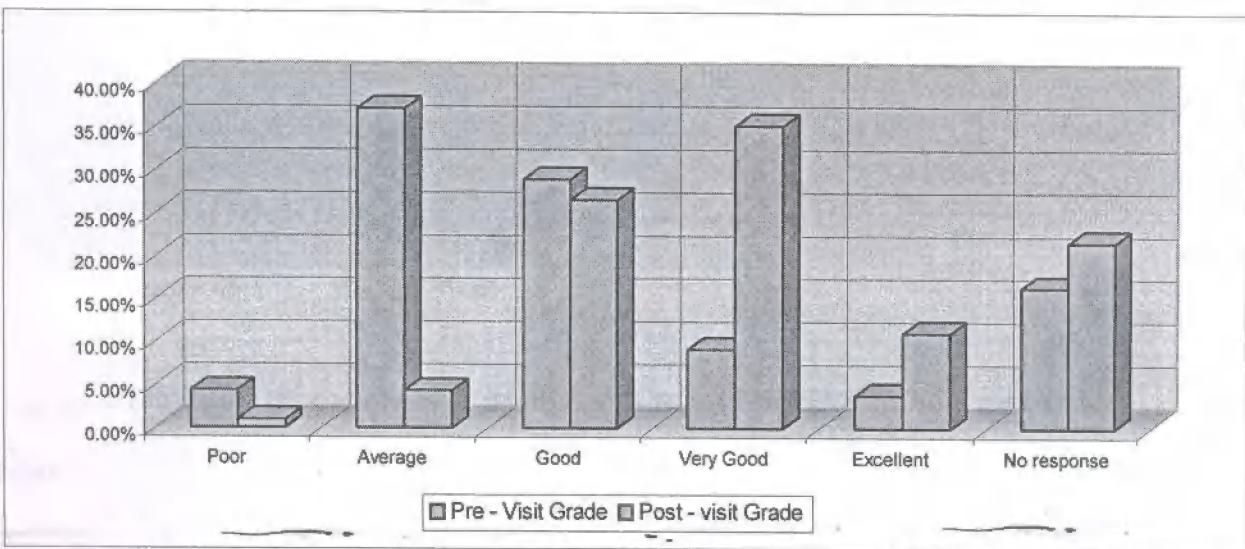
➤ In your opinion, after your students visit to the museum, did they get information / knowledge for preparing their school / college projects?

Yes	No	No response	Total
203	1	3	207
98.07%	0.48%	1.45%	100.00%



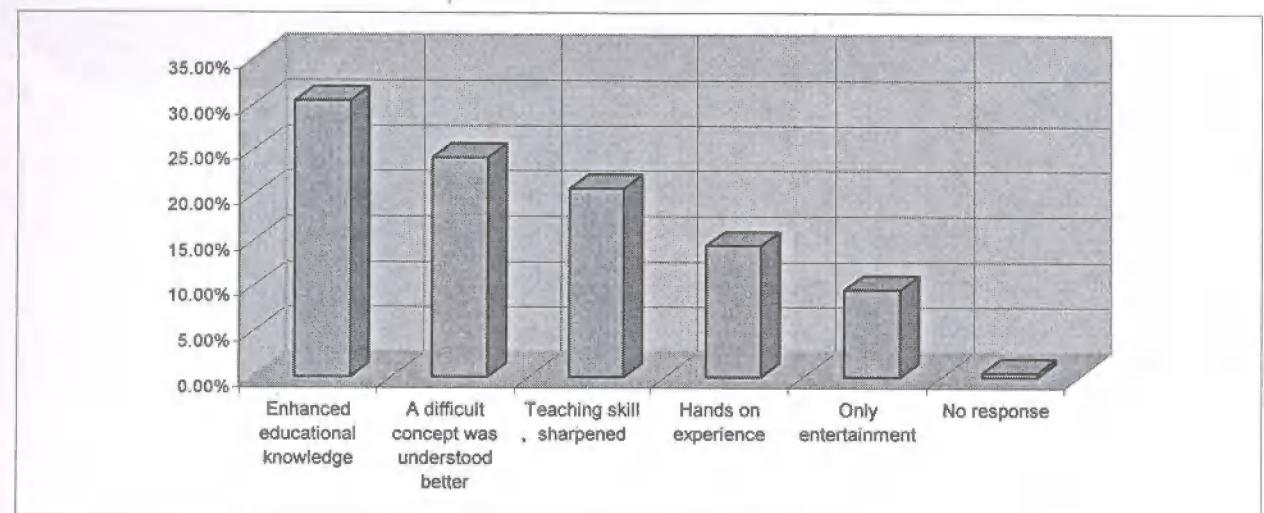
➤ Are you of the opinion that the visit by your students to the Museum would supplement better ideas in school education and also better understanding of the subjects?

Grade	Poor	Average	Good	Very Good	Excellent	No response	Total
Pre - Visit Grade	9	77	60	19	8	34	207
	4.35%	37.20%	28.99%	9.18%	3.86%	16.43%	100.00%
Post - visit Grade	2	9	55	73	23	45	207
	0.97%	4.35%	26.57%	35.27%	11.11%	21.74%	100.00%



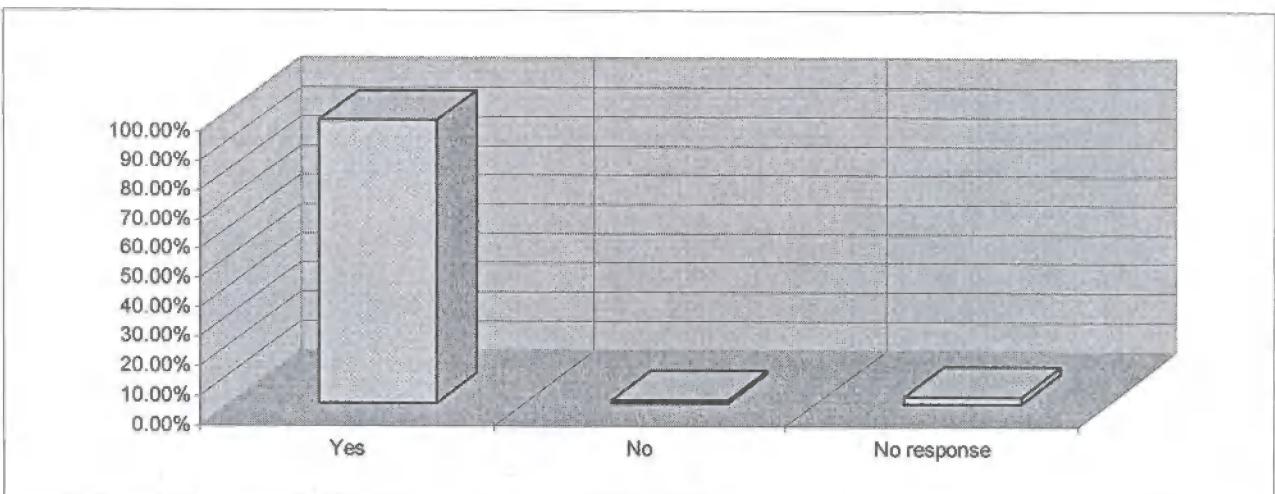
➤ On the basis of your museum visit, do you think the museum serves any of the purposes mentioned here?

Enhanced Educational Knowledge	A difficult concept was understood better	Teaching skill sharpened	Hands on experience	Only entertainment	No Response	Total
63	50	43	30	20	1	207
30.43%	24.15%	20.77%	14.49%	9.66%	0.48%	100.00%



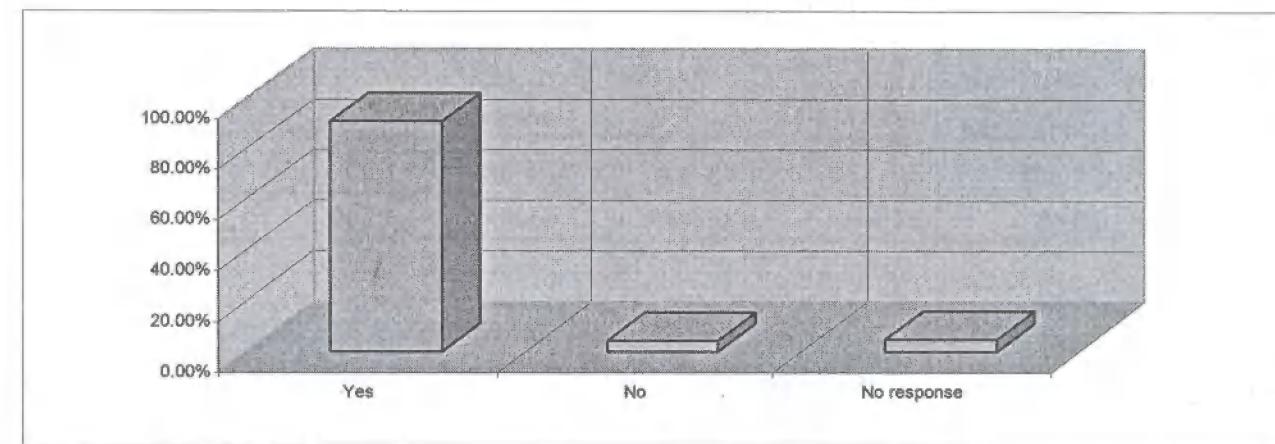
➤ Would you like to visit the museum again?

Yes	No	No response	Total
200	2	5	207
96.62%	0.97%	2.42%	100.00%



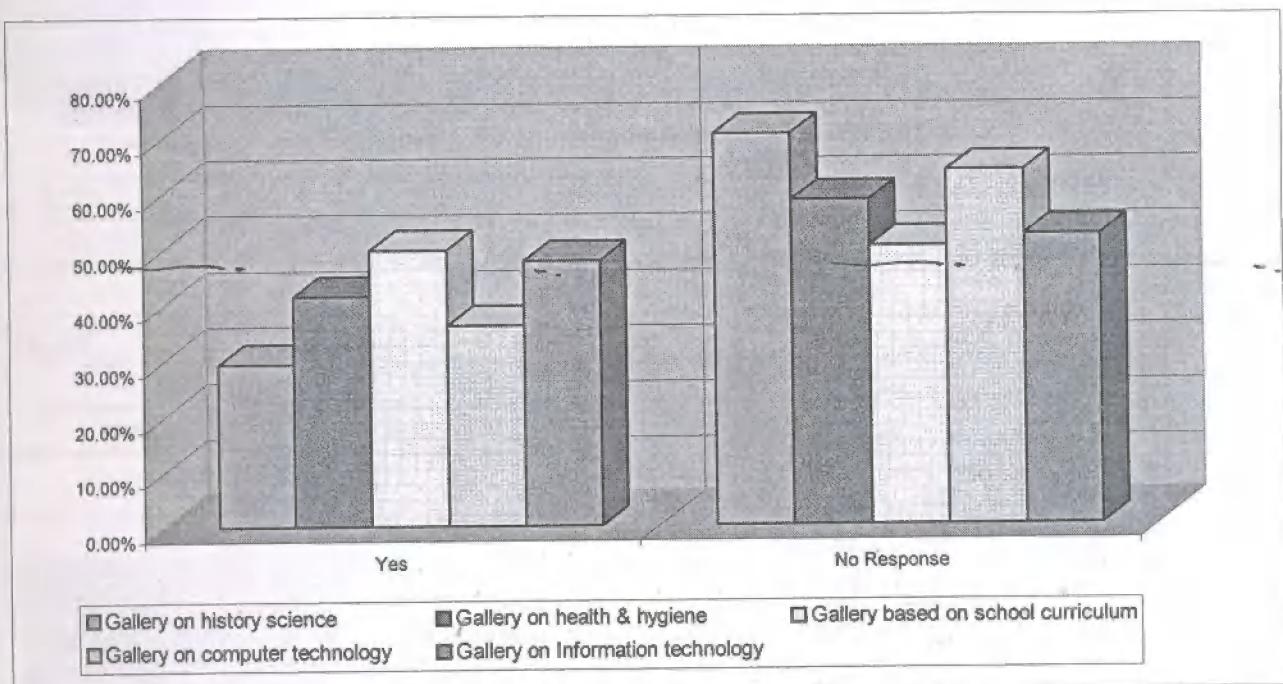
➤ Are there any demands from the students for more such visits to the museum?

Yes	No	No response	Total
188	10	5	207
90.82%	4.35%	4.83%	100.00%



➤ Which of the listed topic/s do you suggest to be added in the museum gallery?

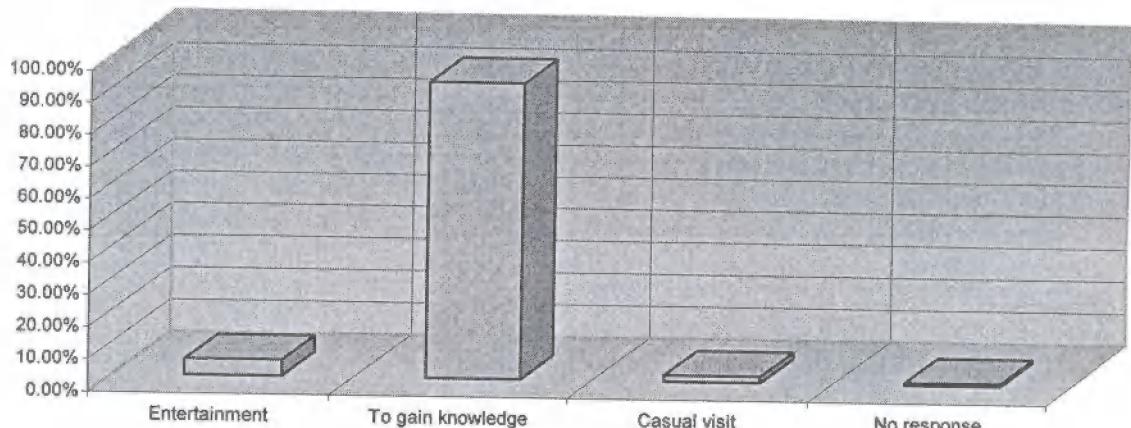
Topic	Yes	No Response	Total
Gallery on history science	61	146	207
	29.47%	70.53%	100.00%
Gallery on health & hygiene	86	121	207
	41.55%	58.45%	100.00%
Gallery based on school curriculum	103	104	207
	49.76%	50.24%	100.00%
Gallery on computer technology	75	132	207
	36.23%	63.77%	100.00%
Gallery on Information technology	99	108	207
	47.83%	52.17%	100.00%



STUDENTS RESPONSE

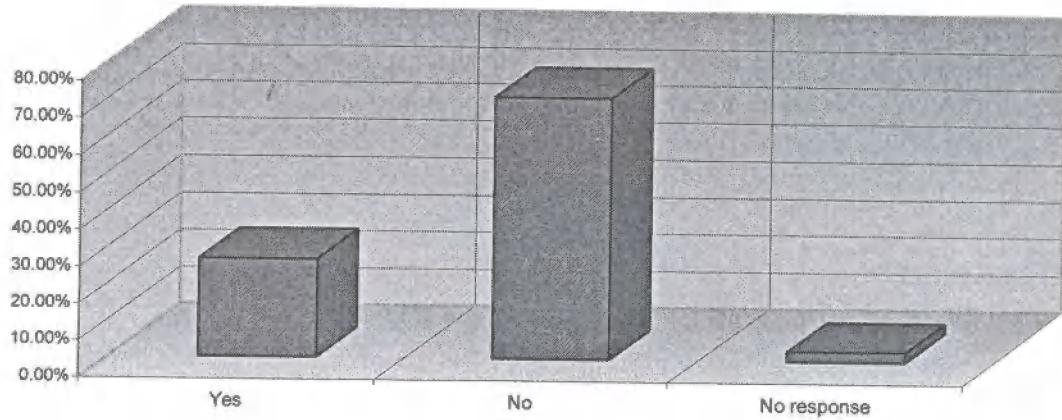
➤ What is the purpose of your visit to the Museum?

Entertainment	To gain knowledge	Casual visit	No response	Total
29	547	12	4	592
4.90%	92.40%	2.03%	0.68%	100.00%



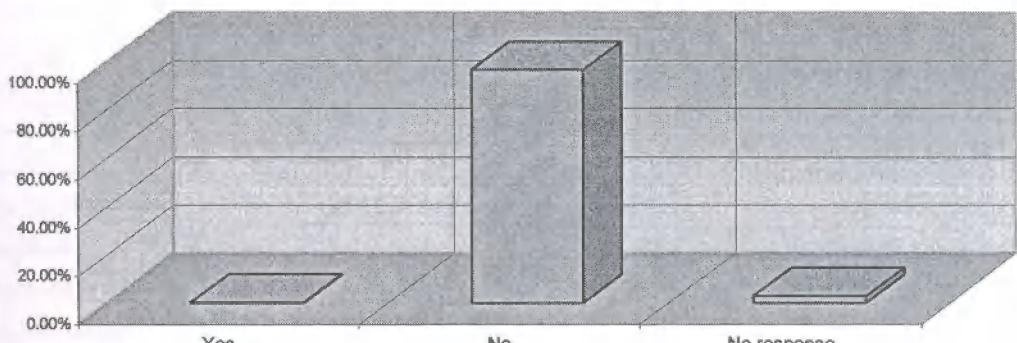
➤ Have you visited any other Science Museum?

Yes	No	No response	Total
158	418	18	592
26.69%	70.61%	2.70%	100.00%



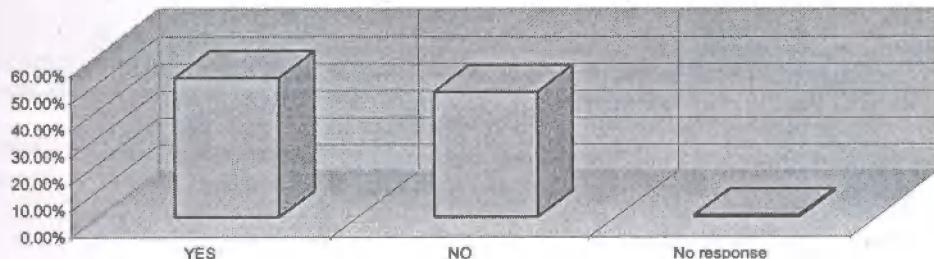
➤ Are you a member of VITM activity club?

Yes	No	No response	Total
2	573	17	592
0.34%	96.79%	2.87%	100.00%

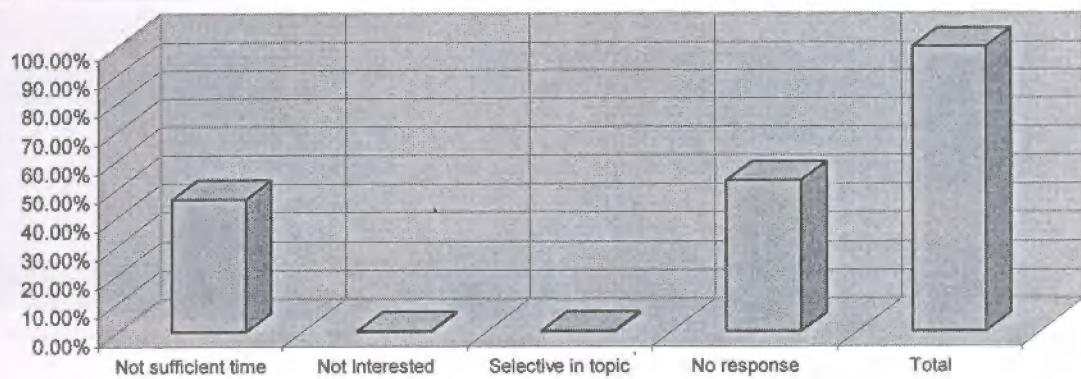


➤ Have you visited all the eight galleries? If not, Why?

Yes	No	No response	Total
309	278	5	592
52.20%	46.96%	0.84%	100.00%

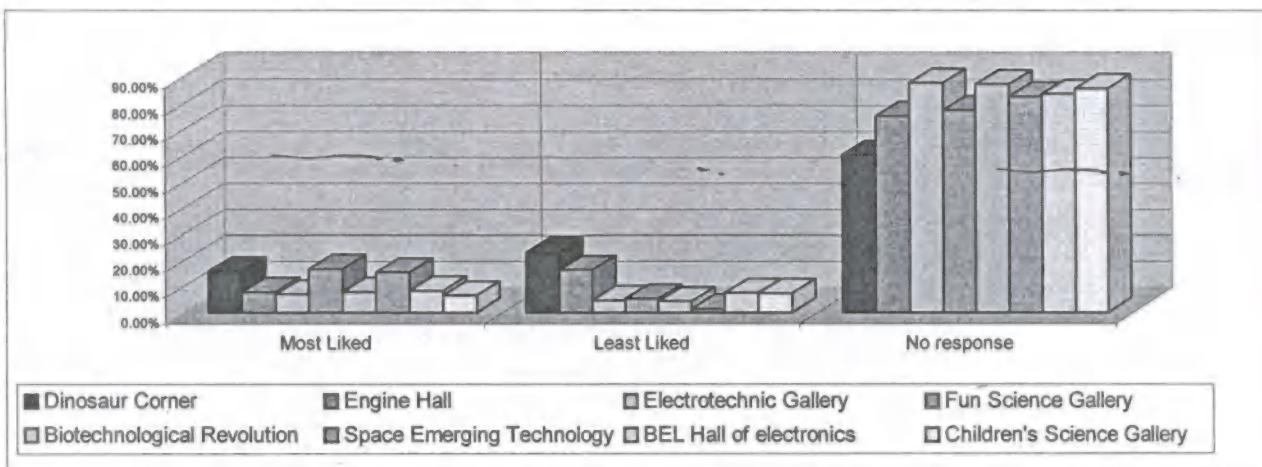


Not sufficient time	Not Interested	Selective in topic	No response	Total
129	1	1	147	278
46.40%	0.36%	0.36%	52.88%	100.00%



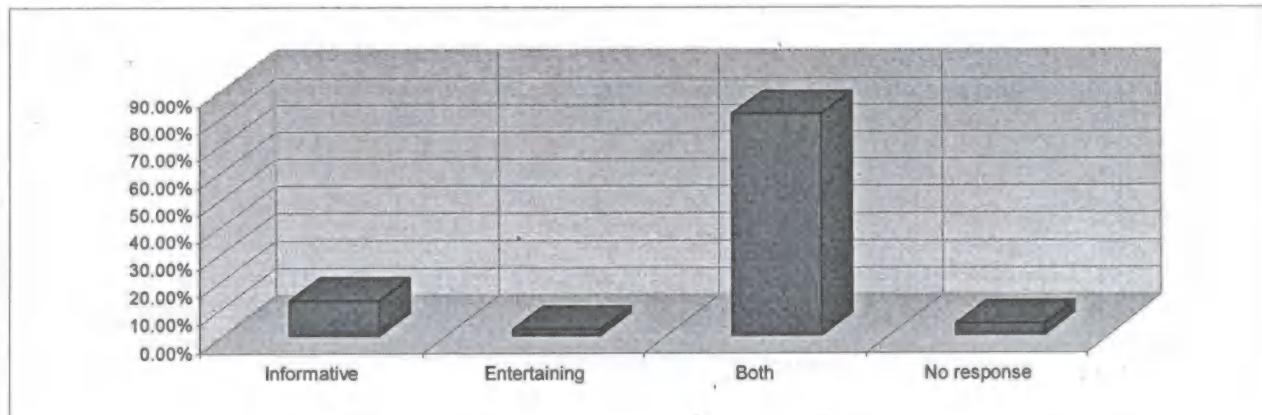
➤ Which Gallery you liked the Most & also the Least?

Galleries	Most Liked	Least Liked	No response	Total
Dinosaur Corner	95	138	359	592
	16.05%	23.31%	60.64%	100.00%
Engine Hall	47	98	447	592
	7.94%	16.55%	75.51%	100.00%
Electrotechnic	42	28	522	592
	7.09%	4.73%	88.18%	100.00%
Fun Science	100	32	460	592
	16.89%	5.41%	77.70%	100.00%
Biotechnological Revolution	47	26	519	592
	7.94%	4.39%	87.67%	100.00%
Space Emerging Technology	92	9	491	592
	15.54%	1.52%	82.94%	100.00%
BEL Hall of electronics	50	45	497	592
	8.45%	7.60%	83.95%	100.00%
Children's Science	39	44	509	592
	6.59%	7.43%	85.98%	100.00%



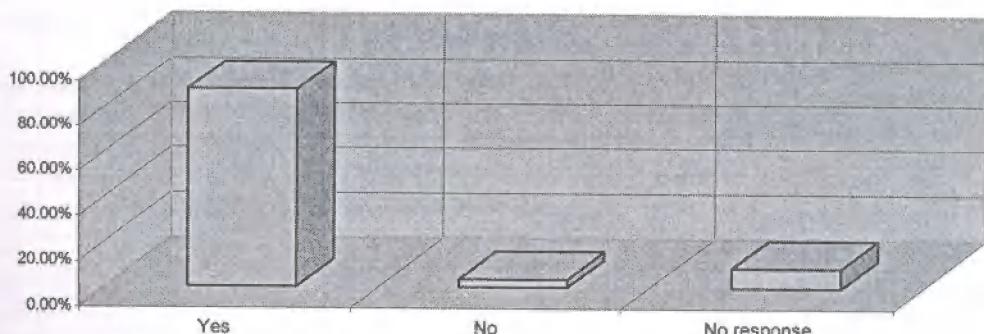
➤ Did you find this museum informative/ entertaining or both?

Informative	Entertaining	Both	No Response	Total
75	13	480	24	592
12.67%	2.20%	81.08%	4.05%	100.00%



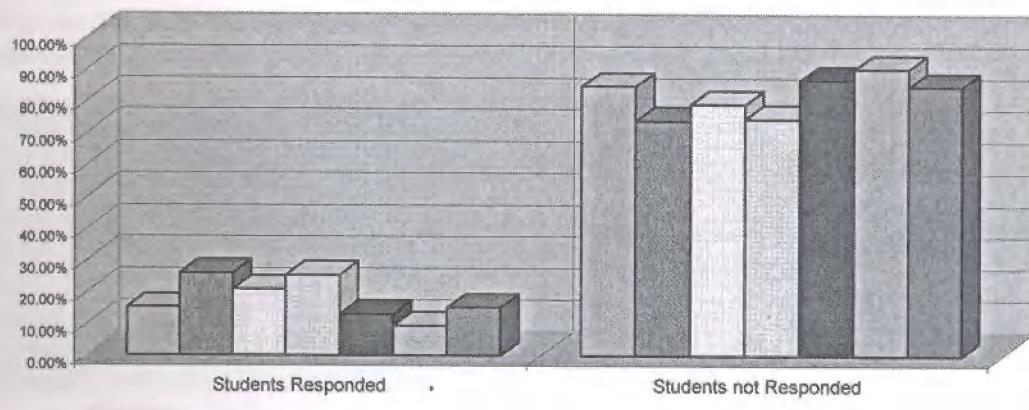
➤ Did the Science Museum visit create any liking for science subjects in you?

Yes	No	No response	Total
519	21	52	592
87.67%	3.55%	8.78%	100.00%



➤ Does your visit to the science museum convince you to opt for any of the following subjects, as a major discipline for further academic studies?

Subjects	Students Responded	Students not Responded	Total
Astronomy	90	502	592
	15.20%	84.80%	100.00%
Physics	154	438	592
	26.01%	73.99%	100.00%
Electronics	123	469	592
	20.78%	79.22%	100.00%
Biotechnology	150	442	592
	25.34%	74.66%	100.00%
Mechanical	77	515	592
	13.01%	86.99%	100.00%
Automobile	56	536	592
	9.46%	90.54%	100.00%
IT	90	502	592
	15.20%	84.80%	100.00%

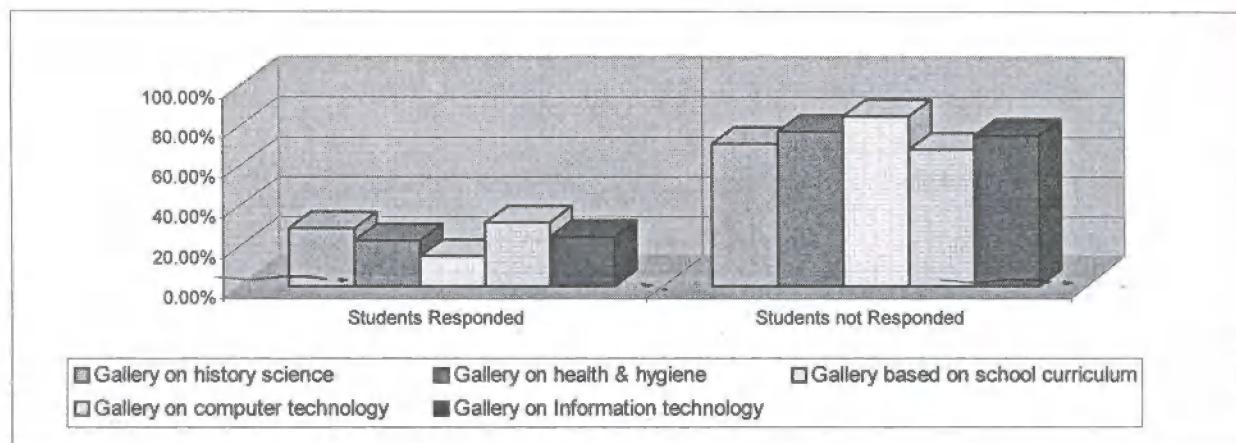


■ Astronomy ■ Physics □ Electronics □ Biotechnology ■ Mechanical □ Automobile ■ IT

➤ Which of the listed topic/s do you suggest to be added in the museum gallery?

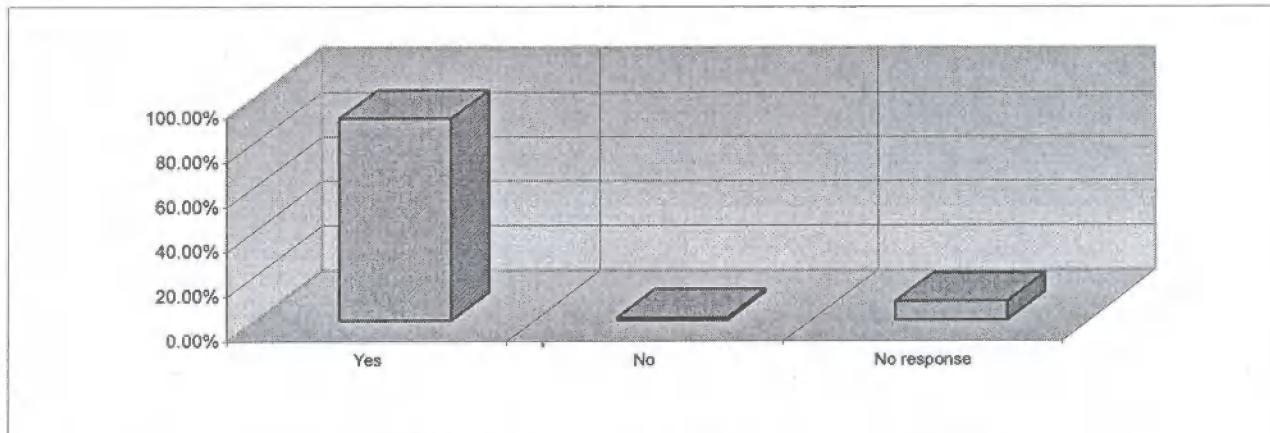
- Gallery on history science
- Gallery on health & hygiene
- Gallery based on school curriculum
- Gallery on computer technology
- Gallery on Information technology

Topics	Students Responded	Students not Responded	Total
Gallery on history science	170	422	592
	28.72%	71.28%	100.00%
Gallery on health & hygiene	135	457	592
	22.80%	77.20%	100.00%
Gallery based on school curriculum	88	504	592
	14.86%	85.14%	100.00%
Gallery on computer technology	187	405	592
	31.59%	68.41%	100.00%
Gallery on Information technology	146	446	592
	24.66%	75.34%	100.00%



➤ Would you like to visit the Museum again?

Yes	No	No response	Total
535	7	50	592
90.37%	1.18%	8.45%	100.00%



SUMMARY

About 8.8 lakh visitors including 3560 school groups, comprising of 1.8 lakh students, had visited Visvesvaraya Industrial and Technological Museum, Bangalore during the year 2004, the "Year of Scientific Awareness". In order to understand the impact of all the gallery exhibits and educational programmes on the school visitors, it was decided to make a school visitors survey by circulating a questionnaire to the school groups that visited the Museum during the year 2004. Accordingly, a questionnaire containing two parts – one for the teacher's response and the other for the student's response – was prepared. This was sent to more than 1000 schools during the year 2005 and 207 teachers and 592 students responded to the questionnaire.

Based on the response so received from the teachers and students, an assessment of the impact of exhibits and educational activities of the Museum on the school visitors was carried out. The major highlight of the survey was that the teachers and the students had expressed that their visit to the Museum had not only helped to enhance their educational knowledge but also had enabled them to understand difficult science concepts easily. The teachers had confirmed they could adapt many new things in their school and their students had been showing improved interest in science subjects.

THANK YOU

CONCLUSION

Visvesvaraya Industrial & Technological Museum, Bangalore with its mixture of wonderful exhibits, educational programmes, libraries, films, videos and computers, teaching and training etc has something in it for all senses of participants, have something in it for all ages, bridging the difference between children and adults, men and women, scientists and laymen by having a common source of appeal and in no doubt it provides multiple opportunities for the students, teachers and the public to broaden and deepen their knowledge and understanding of science, technology and nature.

A survey undertaken in the year 2005 on the school visitors of the year 2004, who form about 20% of the total visitors, had given a great insight in understanding the impact of these exhibits and educational activities of VITM on the school teachers and students.

Some of the important findings of the survey are:

- The amount of viewing time available with the visitors was not sufficient to visit all the galleries. (As the visitors had to rush from gallery to gallery, they did not have sufficient time to study the individual exhibit in depth. It was the overall impressions of the gallery exhibits that had an impact in influencing the viewers).
- 'Engine Hall' was liked by more number of teachers while the Dinosaur Corner was the least liked. The teachers liked all other galleries almost equally. Most of the students liked the "Fun Science and Space galleries" while other galleries were liked equally. They least liked the "Dinosaur Corner".
- A vast majority of the teachers (87%) and students (81%) considered the Museum as both informative and entertaining.
- The teachers were also of the opinion that their students had gained knowledge after their visit to the galleries of the Museum and were showing better understanding and increased interest in science subjects.
- The teachers had confirmed that their visit to the Museum had enhanced their educational knowledge, sharpened their teaching skills, gained hands-on experience and understood better the difficult science concepts.
- About 50% of the teachers wanted a new gallery based on school curriculum while a majority of 32% of the students wanted a gallery on computer technology.
- 88% of the students had expressed that their museum visit had created liking in them for science subjects and their main subjects for future study in order of preference were Physics, Biotechnology, Electronics, Information Technology, Astronomy, Mechanical and Automobile Engineering.
- Both the teachers and students preferred to visit the Museum again.

In general the survey reveals:

- The visit to VITM by the school groups have a favourable impact in changing the attitudes of the teachers and students towards science and technology.
- Most visitors (teachers and students) showed positive changes in attitude, at least as reflected by their response, even after one year period of their visit to VITM.
- The survey certainly showed the potential value of analyzing in some detail the specific impact of VITM exhibits had on the knowledge and attitudes of the school visitors.
- Such surveys could make it possible to better evaluate the effectiveness of scientific and technical exhibits, particularly those designed for pedagogic purposes.

Sukanta Academy

*Madhusudan Banerjee
Officer-in-charge
Sukanta Academy, Tripura*



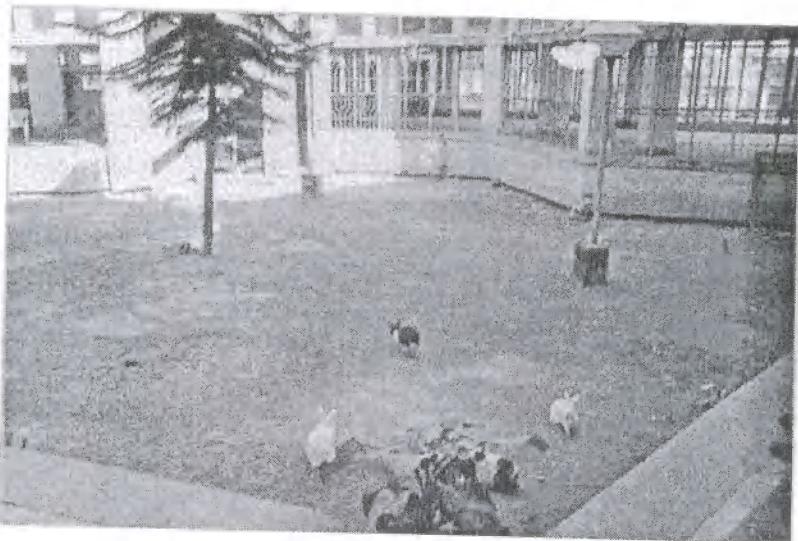
The Main Components of Sukanta Academy

- Science Centre.
- Arts & Cultural Complex.
- Energy Park.
- Science Park.
- Mobile Exhibition Van

Objectives

- To popularize Science.
- To develop scientific attitude.
- To supplement / enrichment of school education.
- To develop new arts and cultural activity.
- To protect the traditional Medicine/ Music/ Dance of the tribal people.

Sukanta Academy Offers You... PET CORNER



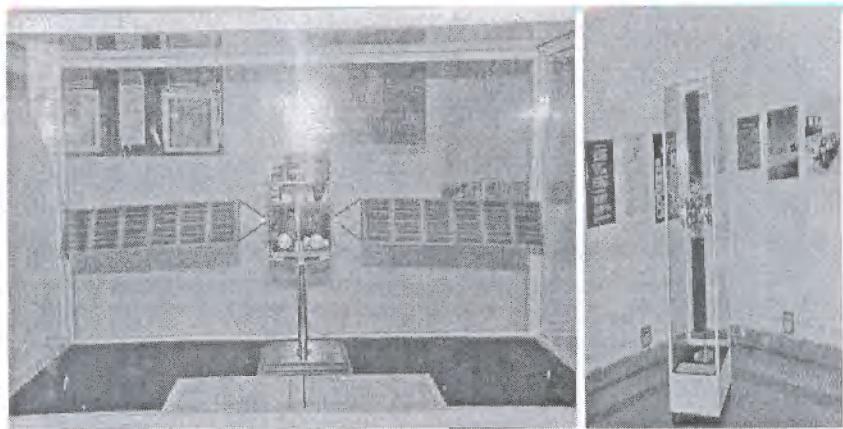
Sukanta Academy Offers You... AQUARIUM



Sukanta Academy Offers You... RAILWAY GALLERY



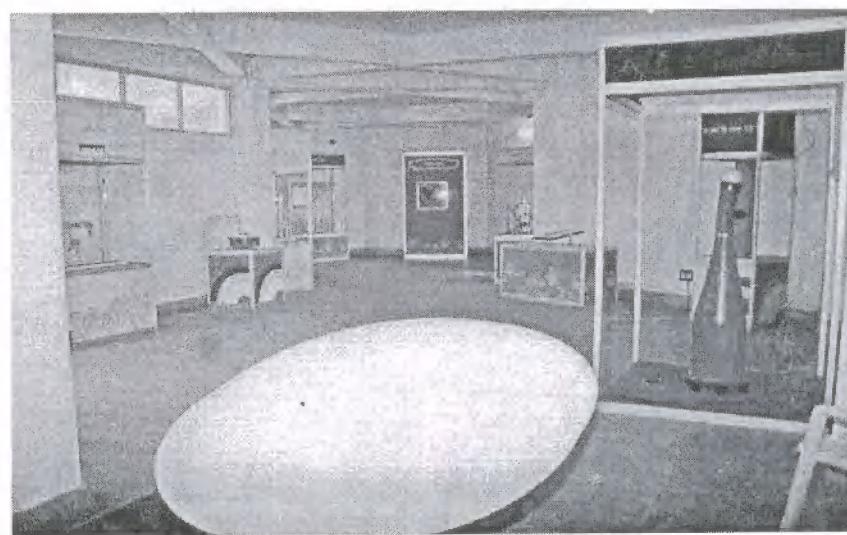
Sukanta Academy Offers You... *INDIA IN SPACE*



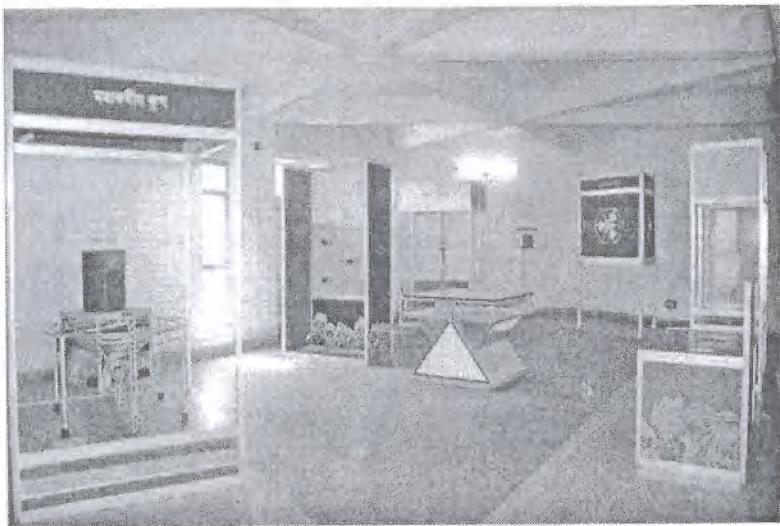
Sukanta Academy Offers You... *FOREST GALLERY*



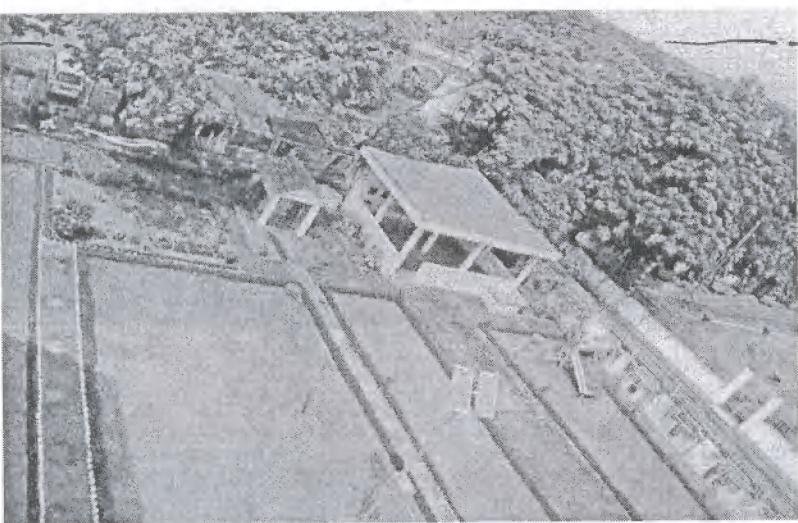
Sukanta Academy Offers You... *POPULAR SCIENCE GALLERY*



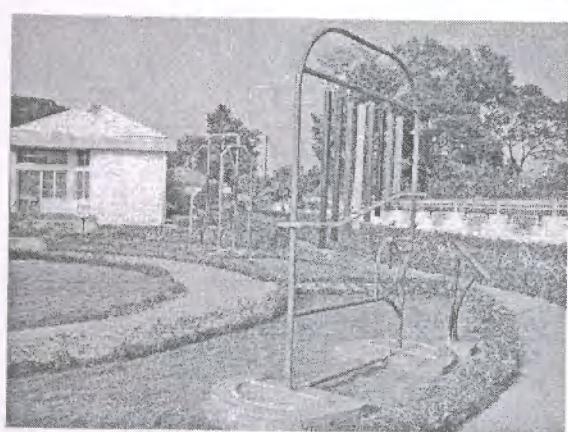
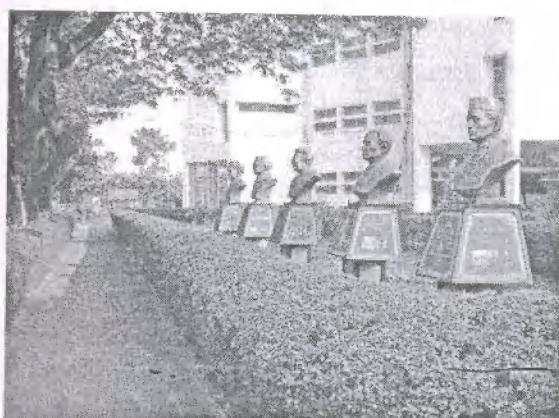
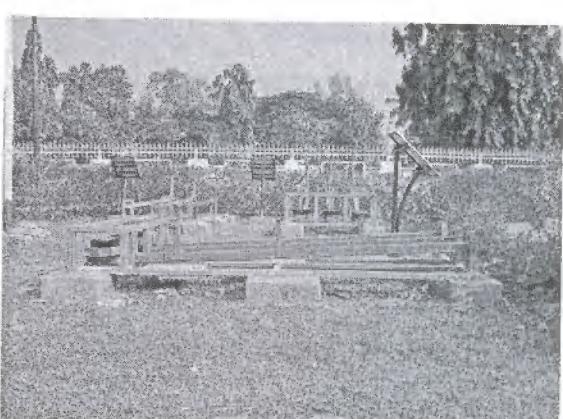
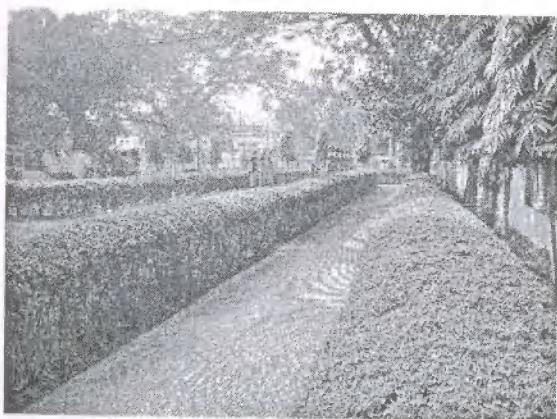
Sukanta Academy Offers You... *FUN SCIENCE GALLERY*



Sukanta Academy Offers You... *ENERGY PARK*



Sukanta Academy Offers You... SCIENCE PARK



Added Attractions...

- Portable Planetarium.
- Audio-Visual Section.
- Library.
- Computer section
- Science Books and Games counter.

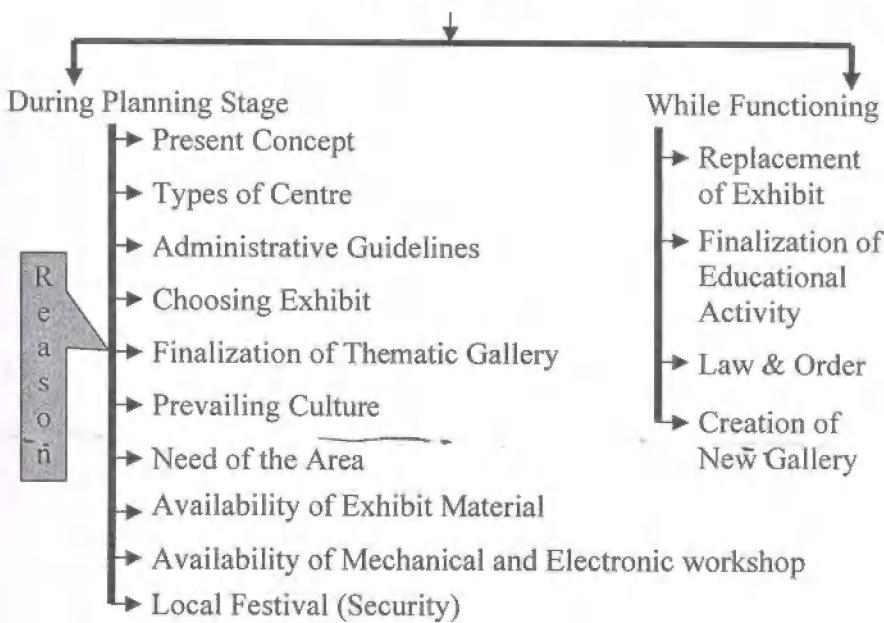
Educational Activities

- Leonid Meteor Shower.
- World Environment day.
- Hiroshima-Nagasaki day.
- Solar Eclipse.
- Lunar Eclipse.
- Sky observation camp.
- Celebration of National Science Day.
- Computer awareness programme.
- Science demonstration lecture.
- Do it yourself to explore and learn science.
- Workshop on basic electronics
- Workshop on “Decorative Piece From Used Poly-bags”.
- Popular talk on Astronomy and celestial objects.
- Sukanta Janma Jayanti Celebration.
- Sit & draw competition.
- Nature activity camp.
- Recitation competition and Dance Drama.
- Temporary exhibition on “Bamboo Materials and use of Bamboo for making low cost house”.
- Observance of Celestial Events like Transit of Mercury, Mars near to Earth, Transit of Venus etc.

Projects Under Progress

- Auditorium
- Wealth of Tripura Gallery
- Journey to Sun via Mars & other Planets.

Understanding Visitor



Visitors learning in science centres - new perspective

D. Rama Sarma

Curator

Nehru Science Centre, Mumbai

Outline

- Learning
- Factors affecting learning
- Is learning same for adults and children?
- Learning About Visitor Learning
- Approaches for effective learning
- Challenge to science centres

Learning is an active process of seeking information about an area of interest, then making meaning in order to create knowledge and new ways of seeing.

This involves

- People
- Engagement
- To make sense
- Conversation with
 - oneself
 - external world

Most successful learning comes when the learner is in control of the activity, able to test ideas by performing experiments, to ask questions, collaborate with other people, seek out new knowledge, and plan new actions.

These essentialities are seldom fulfilled by formal education. Hence science centres are in the picture to provide all these features necessary for successful learning through their interactive exhibits and presentations.

Views of Science Educators

"science centres contribute to science education through each of the cognitive, affective and psychomotor domains"

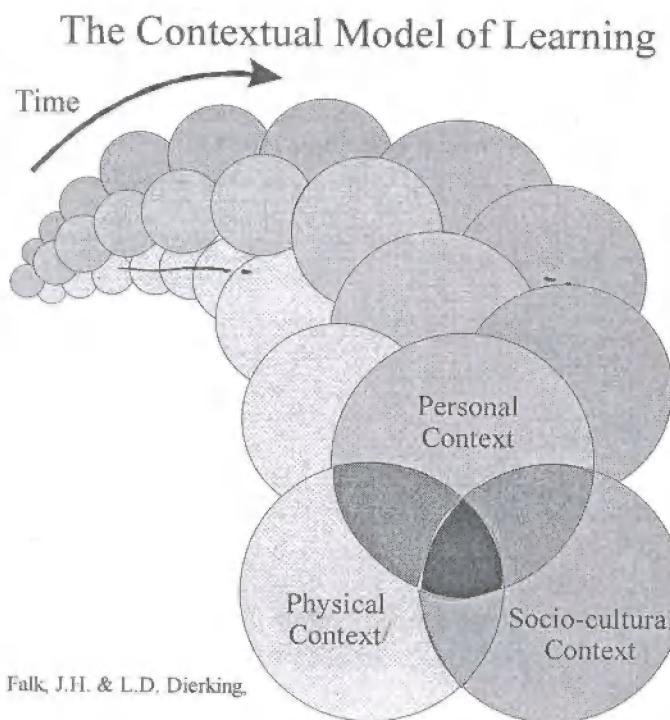
"while hands-on science centres may not contribute immediately and directly to deep understanding – their indirect effect must not be forgotten"

Views of neuropsychologists

"although hands-on experience is effective, indeed essential, for learning to see objects – hands on experience can hardly be adequate for arriving at scientific understanding. It is the interpretation of the perceptual exploration, which creates meaning "

Learning of visitors in science centres is affected / influenced by

- the context
- the behaviour



Personal contexts for learning

1. existing motivation and expectations
2. prior interest—required for "engagement"
3. knowledge and experience—relevant to the experiences offered in the center
4. level of choice and control—there being evidence that choice of learning activity affects both motivation and outcomes positively

Socio-cultural contexts for learning - these allow

1. People to make meanings for themselves as members of social groups—"talking in order to learn"
2. Mediation by teachers, exhibition explainers, and peer group
3. To reflect cultural meanings in the contents and activities of the science center

Physical contexts for learning recognize

1. the benefits of advance planning, preparation, and organization for new learning experiences
2. the value of exhibition trails, learning pathways, advance organizers, etc.
3. the need for learners to feel comfortable in their new surroundings before effective learning can take place
4. the importance of an orientation phase at the start of an educational visit
5. the need to design and reinforce the learning experience itself.

Visitors' learning is affected by their behaviour which is classified in to three major categories

1. Initiation behaviors
2. Transition behaviors
3. Breakthrough behaviors

The Science Center Learning Experience: A Visitor-Based Framework-- by Chantal Barriault

Initiation Behaviors

- a. Doing the activity
- b. Spending time watching others engaging in the activity
- c. Information and assistance offered by staff or other visitor

Transition Behaviors

- a. Repeating the activity
- b. Expressing positive emotional responses in reaction to engaging in the activity

Breakthrough Behaviors

- a. Referring to past experiences while engaging in the activity
- b. Seeking and sharing information
- c. Engaged and involved: testing variables, making comparisons and using information gained from the activity

Nature of learning is different for young people and adults

Each person will gather different information and understandings from the same exhibit.

..... hence efforts need to be targeted

For young people, learning

- involves action (mental or physical), degree of choice and ownership
- is stimulated when new experiences or phenomena are met
- occurs when new and existing ideas can be linked or fill a gap
- involves arousing curiosity
- is supported by social interaction

For adults – learning

- need to be self-directing
- bring prior experiences to any learning episode
- are interested when there is a discrepancy between what they know and what they need to know
- are motivated by both extrinsic and intrinsic situations
- bring a broad agenda to learning situations

Visitor is likely to learn when he or she wants to learn

To understand when the visitor want to learn – we need to learn about visitors' learning

Learning About Visitor Learning

For visitors – learning is

- a social activity
- a sensory experience
- facilitated by ‘real stuff’ and living exhibits
- an active process
- connecting with prior knowledge
- new information
- immediate
- changing your point of view
- long-term
- Individual
- entertaining and fun
- making a difference

How do we incorporate these features in science centres to make visitors ‘want’ to learn?

The suggested approaches are

- Create places not spaces
- Focus on process of science and not mere product of science
- Revise conceptual considerations
- Create experiences for visitors
- Create engaging exhibits (not attractive exhibits)
- Minimal distractions

Create places not spaces

Space – it is a mere commodity consisting of four walls, square footage, an entry and exit – may be with a few objects here and there.

Place – it is about identity and meaning. It allows one to express themselves, interact and unfold their curiosity for the external world ...including people around them.

Focus on

Process of science and not product of science

Producing products of science give mere manifestations and principles underlying it. This approach merely informs the visitors about the individual distinct products of knowledge.

The process of science focuses on the factors leading to the development of a particular piece of knowledge and enunciate its importance in the sociological context as to why that particular piece of knowledge came up but not the others. This approach twines the visitors feelings and social concerns make him the relevance of the product and hence last long in his / her memory for a long time.

Revise conceptual considerations

Some approaches, if incorporated at conceptual stage, could trigger visitors 'want to learn' attitude

- Put ego in the closet-The bottom line is it's about visitors, not about us.
- Walk in visitors' shoes-There are many ways to do this- visitor studies being the major one.
- Think about last experience that enthralled you-This will guide you as, to some extent, what visitors would enjoy.
- Find the emotion behind the content
- Look outside our field for models and techniques- observe what makes mass market products so successful.
- Establish criteria and check it often
- Be willing to experiment with new ideas

Creating experiences for visitors

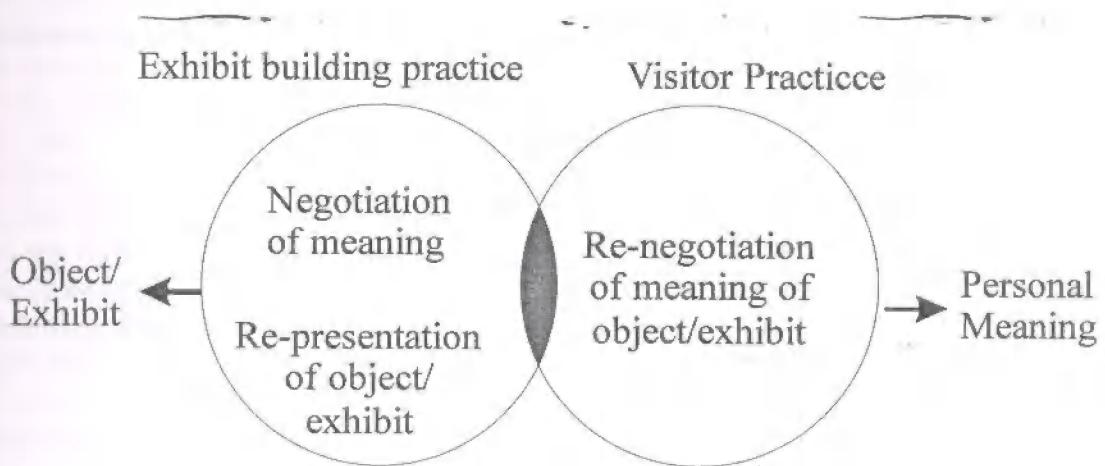
Experience can be thought as memorable events, occurring over time, that engage individuals in an inherently personal way. Experience implies active involvement- of the heart, the mind and the senses. Some ways of creating these experiences are

- Start where visitors are
- People seek order and pattern...
- One size does not fit all
- Visitors are on their time not ours
- Not all visitors come to museums to learn
- Tell a story
- Tell one story at a time
- Visitors are highly visual
- Seek personal connections

Create engaging exhibits: Most important tips

- Provide a good entry narrative- start with something familiar
- Design environment – attractive, accessible, inviting and involving
- Accessible and easy to use exhibits
- Create experience encounters – stimulating (emotionally and intellectually) + Wow factors
- Meet visitors' expectations – educational, entertainment and social interaction
- Provide entry points in exhibitions - posing a question, mixed media
- Offer choice, control, feedback and success – exhibits should allow for success
- Provide for cooperative engagement, direct experience and support with explainers
- Provide leads for follow-up to nurture their developed interests

Constant process of negotiation of meaning



The re-negotiation of meaning in the visitors practice is an important link in the process of personal meaning making and crucial to make something meaningful to someone.

A successful exhibit is one that offers opportunity for involvement that can be matched with a broad range of visitor skills.

In addition to a balance of challenges and skills, the visitor must be able to concentrate and devote full attention to the given exhibit or activity without physical distractions – like crowds, noise, intimidating guards, hunger, bladder pressure and fatigue.

There is a need for both openness and closeness in relation to the exhibit to enable a meaningful encounter at science centres. An openness that creates a space for alternative ways of participation in the exhibit, and a closeness regarding the relationship the participant is able to construe towards it. These are crucial to make exhibits more poignant, emotional, and memorable.

What we have learnt about visitors' learning

- understand the visitors' contexts
- understand their behaviour
- we cannot force them to learn but can certainly trigger their interests through
 - conceptual re-orientation
 - re-negotiating the exhibits for visitors' personal meaning
 - engaging exhibits and creating experience encounters
 - creation of places that associate with the entry narratives

...but a challenge to science centres-

Challenge to science centres

The prejudice that interactive science centres are for children only and the idea of not being enough bright for science, which can only be approached by scientists or people with special characteristics, prevent adult visitors from fully exploiting interactive exhibitions and their opportunities of learning through enjoyment.

MUSEUMS AND VISITORS : CHANGE IN PERSPECTIVE AND VISION

* L. N. Soni
** Amit Soni

ABSTRACT

The change in the perception and approach of the museums today has brought the visitors in the prime focus of the day to day affairs of the museums of all kinds. The museums are coming up with better facilities, display, dissemination of knowledge or education and entertainment. But still museums need to develop a lot to become more productive in terms of its main output that is its visitor friendly services. Now a days, in every type of museum education with amusement has become the main objective along with other activities. A few things with regard to ethnographic museums have been discussed here keeping in mind the changing perspective and vision in the helm of affairs of the museums today.

Museums of Anthropology occupy a special place among the museums of the world. Having their origins in the early fascination of the West with the exotic cultures of the societies, they have become, for the general public, centres of information on those cultures, some of which, of course, no longer exist, while almost all have changed dramatically as a result of Western industrial influences (Renolds, 1989:111). Fenton (1974:29) has estimated that the total anthropological holdings of museums throughout the world comprise some 4.5 million artefacts. Of these it would be reasonable to surmise that less than 50 percent is used for exhibitions, educational, research or other purposes; the rest remains permanently in reserve storage.

It is a well recognised fact that the development of the science of anthropology has been facilitated by the growth of ethnographical, ethnological and culture-history museums (Gautam, 1969; Urry, 1972). Ethnographical museums are established by ethnographic collections and these collections are not mere collection of the artefacts, but they are the life-history of those ethnic groups or communities from where the collections have been made. Through ethnographic collections, a community may be perceived in its totality (Soni, 1995). These ethnographic collections do not give the descriptive account of the community, but they throw light on the aesthetics, technology, material culture, occupational and religious pursuits, and arts and crafts of a community. The ethnographic museums are not only the repositories of cultural materials, but also a dynamic centre for dissemination of knowledge (Morley, 1976).

MUSEUM POLICY

Most of the museums do not have proper codified "Museum Policy", which is resulting in improper orientation and motivation to achieve dwindling goals, keeps on changing as time and priority to different projects and exhibitions. With the changing scenario, proper codified "Museum Policy" is the first basic requirement for all types of museums. A good "Museum Policy" should include all the aspects relevant to a particular museum, such as, Aims, Objectives, Target Visitors, Area Management Policy, Collection Management Policy, Marketing Policy, Visitor Services, Exhibition Policy, Security Aspects, Financial Management Policy, and Personal Management Policy. "Collection Management Policy" includes policies regarding collection, storage, documentation system, preservation,

conservation, collection movement system, etc. "Marketing Policy" consists of policies regarding market study, visitor study and publicity of exhibition and services. Policies in respect of "Visitor Services" include development and upgradation of services on the basis of market studies and visitor studies. "Personal Management policy" consists of policies regarding organisation of staff, motivation and training.

Any museum must explore and decide, first of all, before making their policies about display and education – Who are their target visitors? What are their needs and interests? What are the better possible ways to reach them and disseminate knowledge and information among them? Answers of all these questions can only be got by visitor surveys and market surveys.

DIFFERENT VISITORS AND THEIR NEEDS IN CHANGING PERSPECTIVE

Museum visitors can be categorised on different bases. On the basis of education they can be categorised as illiterate, literate, school children, college student and scholar. On the basis of age they can be categorised as child, adolescent, adult, middle aged, senior citizens. On the basis of sex they can be categorised as male and female. On the basis of place of residence they can be categorised as local people and tourist (national and international / foreigners).

Different people (museum visitors) have different needs and interests. A museum must develop its services according to the needs and interests of its target visitors, which can provide them full satisfaction and motivate them to visit the museum again and again.

Museums have now become the important centres for storage, conservation and dissemination of knowledge. The children have known a great deal about our heritage by visiting museums and proved as great source of cultural heritage. Display should be interactive, impressive and interesting for general public and additional information and services should be provided on demand to interested people and scholars. It should be education with amusement. Now, museums are not mere store houses. They are seen for their output or productiveness and it is measured through number of visitors and museum's public image.

Culture, heritage and development are three interdependent aspects dealing in the realm of museums today as the museums are struggling very hard to assure their relevance and survival in the modern context of the technological advancement (Soni & Soni, 2005). Expectations of the museum goers have now changed from seeing traditional display to active educational and recreational facilities. This is now an ongoing process. One of the major strategies in this movement is the conversion of primary assets, information and images into visual products to make museum collections more accessible and useful to the general public. Now, while visiting museums people look for value for their money, which binds museums for providing appropriate services to attract visitors.

Instead of closed display, open air ethnographic museums are getting more popularity, such as, Indira Gandhi Rashtriya Manav Sangrahalaya (IGRMS), Bhopal, Madhya Pradesh and Dakshina Chitra, Muttukadu, Tamilnadu. They are attracting comparatively

more number of visitors. Community museums can be proved better and beneficial in this respect and have profound scope in India.

MUSEUMS AS EDUCATIONAL INSTITUTIONS

Along with collection and its preservation, education has become the major purpose and important perspective of every museum. Gradually, museums must come up supplementary educational institutions for the students of schools, colleges and universities. They can be provided a better opportunity of practical experiences in museums along with the studies in the classrooms and the labs of their respective institutions. This approach has already been started in the form of university museums and the museums of various educational and research institutions. Better opportunities could be made available to the students by different museums through services of special classes with practical experiences and research and experimental facilities; in their respective specialised field of knowledge. If this approach could be adopted by the museums, specially the big ones, it will start a new era in the history of museums. It will be a milestone step for museums and lead the museums towards new heights.

MUSEUMS IN INDIA

In India, the number of museums is quite less in comparison to the west. It is now required that more and more museums of art, ethnography, craft and historical nature should come into existence in our country. Museums must come up with local glow and expertise at all levels to feed back our national demand. These local museums, in turn, should be associated with the bigger museums of national importance. It will not only encourage the people's involvement, but also promote the establishment of different types of museums in our country.

There are various types of museums in our country. **Art and archaeology museums** are the oldest one. In most of the erstwhile princely states of Rajasthan and other places in India, we find a number of **personalia museums** exhibiting their personal possessions, weapons, ceramic objects, paintings, manuscripts, etc. Some of the residences of national leaders have also been converted into museums for public. Likewise, some of the business houses and industrial complexes have developed their own **industrial museums** to show and publicise their products. **Science museums** are coming up nicely and splendidly under the National Council of Science Museums in our country. **Craft, art, textile, handicrafts and handloom museums; natural history museums, children's museums, industrial and technological museums, commercial museums, rail transport museums; doll museums, the state museums** are some other specialised museums, which are significant to their own fields. It is now of utmost importance to update the museums and to create visitor friendly atmosphere along with new vision for furtherance of peoples' interest and involvement.

The Anthropological Survey of India (An.S.I.) has established Zonal Anthropological Museums (ZAM) in its regional centres, out of which Port Blair, Jagdalpur and Nagpur attract a large number of visitors. Port Blair has its own importance due to regular flow of national and international visitors. ZAM, Port Blair is in the tourist map of the Andaman and

Nicobar islands. Invaluable collections from the Andamanese, Onge, Jarawa, Sentinelese, Shompen and the Nicobarese tribes make them captivated for a while to see their excellence in art and craft work. People want to know more and more about their life-style and dwindling population. ZAM, Jagdalpur attracts the local visitors as well as tourists who go there for some official works or to see the scenic beauty of the forest clad tribal pockets of the district of erstwhile Bastar, which is now divided into Kanker, Dantewada and Jagdalpur districts. Maximum number of tourists received during Dussehra festival of Bastar, which is famous for its tribal patronage. Domestic tourists pay visit occasionally to the museum, but foreigners like to visit the museum to acquire knowledge about the arts and crafts of Bastar along with ethno-history of the area. ZAM, Nagpur also attracts a good number of visitors due to its location in front of a South Indian temple and rich display. Hence, location, purpose, interest and beautiful collections attract the visitors from all walks of life.

The Survey has developed two exhibition sets at national level, which are mobile in nature and very scientific in their approach. The first exhibition namely, "Human Origins, Genome and People of India" was developed in 2004 and exhibited for the first time in National Museum, New Delhi for a couple of months. Then it travelled to Bhubaneswar State Museum, Nagpur Science Centre, Mysore Dussehra Ground, IGRMS Bhopal, Guwahati Science Centre, Kohima and now it is to be installed at Imphal for a month in 2006-07. This is a big exhibition set focusing on Human Evolution, Genome and Human adaptation. The second one is a set of Photo-Exhibition and is also mobile in nature which focuses on diversity and syncretism. It was made in 2005 and is entitled, "Celebration of Diversity : Dialogue and Empowerment". It was exhibited first at New Delhi in India International Centre and Indira Gandhi National Centre of Arts, then at Nagpur and now it is going to be exhibited at Pune. The First exhibition is actually designed for the common public and students. The toughest subjects of human evolution and genome have been presented in the simplest and sequential form to understand the subject in greater connectivity and educative manner. It attracts a large number of crowd from all walks of life. The photo-exhibition is theme specific and attracts also the visitors from all sections of the society.

Visitor is the main focus for any kind of museum today. It is observed that in the 19th century, the museums were very much object-oriented, but the view-point altogether changed in the 20th century. The visitors became the main target for all the museums. Documentation part developed considerably and the museums started functioning as centres of recreation, learning and dissemination of knowledge. Outreach programmes also increased with enriching of the internal display, hands on experience and participatory programmes in the museums. The museums have now started fund-raising for their own survival and sustenance. This shows a vital change in the perception, outlook, approach and functioning of the museums today in order to facilitate more and more to their visitors.

ACKNOWLEDGEMENT

The authors are very grateful to Dr. V. R. Rao, Director, Anthropological Survey of India for providing all kinds of facilities in preparation of this paper.

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* **L.N. Soni**, Keeper, Central Museum, 2, Ripon Street, Anthropological Survey of India, Kolkata (W.B.) – 700016.

** **Amit Soni**, Senior Research Fellow, 27, Jawaharlal Nehru Road, Anthropological Survey of India, Kolkata (W.B.) – 700016.



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